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Anesthesia in Victorian Canada: surgical accidents, risk, and safety

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Abstract

The process of inhalation anesthesia was one of several Victorian innovations that transformed surgery. Its uptake in Canada from the 1840s to the early 1900s affords insights into situating attitudes towards surgical accidents, risk, and safety, along with the concomitant issues of blame and medical progress. Based on contemporary English-language Canadian medical journals, including their publication of clinical case reports, detailed newspaper accounts of legal proceedings, and editorial commentaries, this article reveals a spectrum of responses by Canadians to the opportunity of being spared pain during surgical operations and childbirth. These published sources show that the uptake of inhalation anesthesia was not a straightforward or inevitable success story, although it became commonplace and standard practice. Rather, as I demonstrate, enthusiasm over its adoption in Canada was tempered by social and scientific questions, making the process complex, nuanced, and subject to challenge and debate.

Keywords anesthesia, Victorian Canada, surgical accidents, risk, safety, professionalization

Historians of medicine have long used the term "revolution" to describe the transformation of surgery during the Victorian era.[1] The process of inhalation anesthesia—breathing in the evaporated fumes of liquid sulphuric ether and/or chloroform—was but one of several Victorian innovations that changed the course of surgery. Anesthesia's role in any such revolution seems incontrovertible for, as Stephanie Snow writes, painless surgery "remains indeed at the bedrock of our twenty-first century medicine. It is hardly possible to construct the innovation

1 A.J. Youngson, *The Scientific Revolution in Victorian Medicine* (New York: Holmes and Meier Publishers, 1979); J.T.H. Connor, "The Victorian Revolution in Surgery," *Science* 304 (2004): 54-55.

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of anaesthesia as anything but beneficial."[2] Yet it surely was the most dramatic. From the mid-1840s, with discovery of the stupefying and pain-killing action of certain volatile liquids, doctors marvelled how a patient under anesthesia for amputation turned the usual scene of pain and anguish to one that could be ludicrously comical as the person joked during the painless operation. As Snow's study of the introduction of anesthesia in Britain demonstrates, however, its benefits came at a serious cost for some; its acceptance and success were not necessarily inevitable owing to the interplay of clinical, professional, legal, popular, and gendered issues.

In Canada, I argue, the uptake of inhalation anesthesia from the 1840s to the early 1900s was similarly not a straightforward or inevitable success story, although it became commonplace and standard practice. Doctors and patients learned that there were often side effects to painless surgery; patients felt nauseated, vomited, and sometimes even died as a result of anesthesia. Professional and public debate over the benefits and costs of anesthesia is thus one strand of my analysis. Determining *why* death might occur and *who* was responsible are other strands. Central to my analysis is foregrounding important questions about gender; anesthesia was employed during childbirth, but the wisdom and risk associated with its use on women were disputed in Canada as elsewhere. Furthermore, the asymmetric power dynamic between male doctor and female patient might also be intensified as women exercised choice and agency to demand a painless birth. Because men dominated the established medical profession in Victorian Canada, many feared that women patients might be sexually assaulted when insensible due to their inhaling any noxious substance administered by a doctor or similar male professional. My analysis of these debates surrounding anesthesia in Canada allows comparison with historical studies for the United States and Britain, countries whose clinical activities and social trends affected Canadian practices owing to geographic proximity, and political, intellectual, or cultural ties.

Additionally, anesthetic methods in Canada in the Victorian era afford insights to attitudes towards surgical accidents, risk, safety, and society, along with the concomitant issues of blame and medical progress. As Megan Davies and Geoffrey Hudson note, it is difficult to define and categorize what actually constitutes an accident, but their recently edited collection of essays focuses on "the small accident, the intimate catastrophe, the personal disaster that may become a matter of public interest" in Canada.[3] Moreover, they observe, when public interest was generated, it was often grounded in the "blameworthiness" of those who might have been deemed responsible; thus explaining or recounting the narrative of an accident can have a "moral geometry." Relatedly, and perhaps even more important, is the notion that accidents may have posed an obstacle to "progress" as failure to learn from such mistakes might have for example, undermined a new technology or an innovative process. This analysis reveals many of these same issues at play in the uptake of anesthesia in Canada.

There has been very little historical discussion about the introduction of anesthesia into Victorian Canada.[4] Since its early history was a microcosm of the larger story of the

2 Stephanie J. Snow, *Operations Without Pain: The Practice and Science of Anaesthesia in Victorian Britain* (Houndmills: Palgrave Macmillan, 2006), 2.

3 Megan J. Davies and Geoffrey L. Hudson, ed., *An Accidental History of Canada* (Montreal: McGill-Queen's University Press, 2024), 7-8.

4 Previous accounts typically have been written by practising anesthesiologists who focussed on professional milestones in the development of their specialty while paying little attention to patients subjected to painless surgery. See David A.E. Shephard, "The Evolution of Anaesthesia as a Specialty in Canada," *Canadian Journal of Anaesthesia* 37 (1990): 134-142; Douglas Craig, Diane Biehl, Robert Byrick, and John G. Wade, "History of

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development of Canadian medicine, as this article will show, even the choice of the anesthetic agent used in Canada was influenced by developments in the US and by intellectual and cultural ties with Britain.[5] Briefly, until the end of the Victorian period, the Canadian state and society were forming: from its Confederation of separate British colonies in 1867, "Canada" comprised the central provinces of Ontario and Quebec, along with two Maritime provinces, to be joined years later by other provinces. Official languages, along with legal and educational systems—then until now—are distinct following the founding countries of Britain and France. Although medical practice and the licensing of doctors were regulated by legislative Acts from the late 1790s, they were keyed to the governance of the English colonies by London in Great Britain. After Confederation, the new province of Ontario passed the Medical Act in 1869 that remained the legislation regulating doctors, with amendments, to the end of the Victorian period. Notably, the Act included other forms of medical practice (often called "sectarian") such as homeopathy and Eclecticism. A factor that significantly influenced these and other medical activities, especially in Ontario, was proximity to the US: many American doctors or unlicensed practitioners settled or circulated in this British colony before Confederation, often bringing with them ideas and values that conflicted with British ideology.[6] Finally, this period preceded any standardization of medical curricula, requirements, or institutional amenities before the well-known Flexner Report for North American medical schools in 1910.[7]

This article is based primarily on contemporary English-language Canadian medical journals in the Victorian era, which themselves reflect the development of Canada as a country, in addition to tracing both the regulation of medical practices and the professionalization of medicine. They are also a rich and little explored source for understanding intellectual debates in medical practice: consisting of over 20 titles spanning approximately 60 years, this survey thus covers almost the entire corpus of this genre for Canada in this period.[8] Since most medical journals emanated from Montreal and Toronto, the bulk of the information originates from Lower Canada/Canada East (becoming the province of Québec in 1867)

Canadian Anesthesia," in *The Wondrous Story of Anesthesia*, ed. Edmond I. Eger II, Lawrence J. Saidman, and Rod N. Westhorpe (New York: Springer, 2015), 321-329.

5 Ideally, readers could be referred to satisfactory synthetic Canadian historical monographs on the history of Canadian medicine that would provide such comprehensive information; unfortunately none exist.

6 On specific cultural influences, see for example, Jennifer J. Connor, "Thomsonian Medical Books and the Culture of Dissent in Upper Canada," *Canadian Bulletin of Medical History* 12 (1995): 289-311; J.T.H. Connor, "'A sort of *felo-de-se*': Eclecticism, Related Medical Sects and their Decline in Victorian Ontario," *Bulletin of the History of Medicine* 65 (1991): 503-527; J.T.H. Connor, "Homoeopathy in Victorian Canada and its Twentieth-century Resurgence: Professional, Cultural and Therapeutic Perspectives," in *Culture, Knowledge and Healing: Historical Perspectives of Homeopathic Medicine in Europe and North America*, ed. Robert Jütte, Guenter B. Risse, and John Woodward (Sheffield: European Association for the History of Medicine and Health Publications, 1998), 111-138.

7 For an encyclopedic overview of Flexner's review of the eight Canadian medical schools at the time, see N. Tait McPhedran, *Canadian Medical Schools: Two Centuries of Medical History, 1822-1992* (Montreal: Harvest House, 1993).

8 Jennifer J. Connor, "Publisher Ownership, Physician Management: Canadian Medical Periodicals in the Victorian Era," *Victorian Periodicals Review* 43 (2010): 388-428; David S. Crawford, *Bibliography of Canadian Health Sciences Periodicals 1826-1980* at https://internatlibs.mcgill.ca/bibliography/contents.htm; Jennifer J. Connor, "Medicine and Health," in *History of the Book in Canada, 1840-1918*, Vol. 2, ed. Yvan Lamonde, Patricia Fleming, and Fiona Black (Toronto: University of Toronto Press, 2005), 419-423.

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and Upper Canada/Canada West (becoming the province of Ontario in 1867); it was not until the later nineteenth century that Francophone doctors and Canadians across the country established their own journals. To some extent Canadian medical journals projected the voice of the urban medical elite, but owing to their encyclopedic and non-specialized objectives, along with the fact that rural and remote practitioners were also regular contributors, they provide a cross section of Canada's doctors. Moreover, unlike current professional publications, their often conversational style conveyed much social and personal information about patients, domestic settings, and conditions, where clinical activities took place—especially in case reports of "kitchen-table surgery" performed by the proverbial "country doctor."[9] Major Canadian institutions such as the Toronto General Hospital (TGH) and the Montreal General Hospital (MGH) appear not to have saved, if they ever existed, detailed operation records that might have identified patients' race, gender, age, procedure, anesthetic used, and surgical outcome; indeed, it was not until the early 1900s that any example of such hospital documentation was formulated that might have provided such valuable historical data.[10] Instead, nineteenth-century Canadian medical journals published clinical case reports and editorial commentaries on court proceedings that, combined with newspaper accounts of legal proceedings (which often were reported *verbatim* as court transcripts), reveal a surprising spectrum of responses by Canadians being anesthetized. This article therefore uses these published materials in a qualitative way to understand how and why anesthesia was a central topic in Victorian Canada.

"Rendered unconscious of torture"

"[T]he intense agonies of travail [i.e., labour and childbirth] can be attenuated or abolished, sleep produced in spite of intense pain, and at the word of the physician any sufferer can be rendered unconscious of torture," noted R.W. Garrett of Kingston, Ontario in a convocation address in 1901.[11] His use of terms such as pain and torture, and how they could be eliminated, underscored the often uncharted emotional attitudes of surgeons, and how they changed in the pre- and post-anesthetic eras. In the eighteenth and early nineteenth century, experimentation with stupefying and/or soporific drugs such as laudanum (opium) and alcohol were well-known to induce painlessness in persons; so, too, nitrous oxide (laughing

9 A substantial literature exists on such narrative medicine, its historical evolution in publications, and more recently, the public representation of patients. Studies relevant to this investigation include Harriet Nowell-Smith, "Nineteenth-century Narrative Case Histories: An Inquiry into Stylistics and History," *Canadian Bulletin of Medical History* 12 (1995): 47-67; Jennifer J. Connor, "Case by Case: Private and Public Representations of Patients in the Grenfell Mission in Newfoundland and Labrador in the Early 20th Century," *Canadian Bulletin of Medical History* 38 (2021): 340-371; Sasha Mullally, "Kitchen-Table Surgery: Rural Risk and Accidental Care in Early Twentieth-century General Practice," in *Accidental History of Canada*, 342-366.

10 For quantitative studies elsewhere that use such records, see Martin S. Pernick, *A Calculus of Suffering: Pain, Professionalism, and Anesthesia in Nineteenth-Century America* (New York: Columbia University Press, 1985); Christopher Lawrence, "Experiment and Experience in Anaesthesia: Alfred Goodman Levy and Chloroform Death 1910-1960," in *Medical Theory, Surgical Practice: Studies in the History of Surgery*, ed. Christopher Lawrence (London: Routledge, 1992), chapter 9.

11 R.W. Garrett, Convocation Address, Queen's College, 24 March 1901, reprinted as "The Science and Art of Surgery; Its Progress During the Nineteenth Century and Its Prospects for the Twentieth," *Kingston Medical Quarterly* 5 (1901): 94-95.

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gas). Their action, however, was too unpredictable and liable also to induce boisterous or otherwise uncontrolled behaviour, so their use in surgical operations was never embraced routinely. As Michael Brown has argued, from the late eighteenth century to the later Victorian era, the mindsets of British surgeons changed considerably regarding pain they inflicted on their patients, along with operative styles. "The introduction of ether and chloroform was not simply a technical development," he notes, "it served to reshape the social, political and emotional relations in the operating theatre. … One might assume that, with the patient now less of an immediate concern, surgeons did not need to be quite as emotionally astute or attuned as they had been when the patient's temperament could have a material effect on the outcome of a procedure."[12]

Placing patients in an hypnotic trance so deep—"mesmerizing" them—that they became unaware of surgery on them became fairly widely practised beginning in the early 1840s across the Anglo-world (especially India). Although it was deemed to veer into charlatanism and quackery, many mainstream doctors employed the technique despite it being tricky to administer and unreliable.[13] As early as 1843, a newspaper report from Canada West told readers how this "mysterious agent" of mesmerism may be "the instrument of good in some hands, …it is [also] capable of being made the instrument of incalculable evil." Noting that two young women had been the "victims of licentiousness, while under the influence of this incomprehensible devil" was a warning that women not trust themselves "in the hands of any mesmerizer."[14] Doctors in Canada East used mesmerism as an "instrument of good" in the treatment of one woman for hysteria, and in the surgical removal of the lower jaw and several teeth of a man.[15] In the latter case, James Douglas and William Marsden, both prominent doctors in Quebec City, undertook the operation. Marsden recounted how he placed himself relative to the patient in a "situation to command his eye without interfering with the operator [Douglas]; and having by a series of passes destroyed sensation in the head and face, I desired him to keep his eye steadily upon mine … and that he would feel no pain, although he would know what was going on about him."[16] According to Douglas, Marsden succeeded in inducing trances in other patients allowing Douglas to carry out procedures without the patient experiencing pain.[17] Despite such reports, even Douglas later acknowledged that mesmerism while "in vogue" was "extremely uncertain," and that as few people "possessed sufficient power to render it always available" the technique fell into disuse.[18]

The use of inhalation anesthesia to induce insensibility to pain truly began with ether in Boston in late 1846, and chloroform the following year in Scotland.[19] This innovation was

12 Michael Brown, "Surgery and Emotion: The Era Before Anesthesia," in *The Palgrave Handbook of the History of Surgery*, ed. Thomas Schlich (London: Palgrave, 2017), 347.

13 Alison Winter, *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: University of Chicago Press, 1998).

14 "Mesmerism," *London Herald, and London and Western Districts Advertiser*, 18 February 1843, 2.

15 James Crawford, Letter to Editor, *Montreal Medical Gazette* 1 (1844-1845): 288, 290.

16 William Marsden, "Electro-Biology Successfully Applied to Surgery," *British American Medical and Physical Journal* 6 (1850): 393. On Marsden's important career, see Sylvio LeBlond, *Médecine et médecins d'autrefois: Pratiques, traditionnelles et portraits québécois* (Québec: Les Presses de L'Université Laval, 1986), 147-166.

17 James Douglas, *Journals and Reminiscences of James Douglas, M.D. ed. by his Son* (New York: privately printed, 1910), 144-145.

18 Ibid., 143-144.

19 For aspects of the early history of anesthesia, see Julie M. Fenster, *Ether Day: The Strange Tale of America's Greatest Medical Discovery and the Haunted Men Who Made It* (New York: HarperCollins, 2002).

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covered in Canadian newspapers. *The Globe* of Toronto for 23 December 1846, for example, reprinted the original article from the *Boston Medical and Surgical Journal* announcing the novel use of ether in surgery.[20] The popular press in effect scooped its professional counterpart as it was not until January of 1847 that Canada's only medical journal picked up the story using an article also reprinted from an American journal; subsequent issues reprinted more news on the "discovery" and use of ether from British and Irish periodicals.[21] By March of 1847 the Montreal-based journal editors concluded that "a means is now presented for mitigating, to a very marked extent, the excruciating pain and agony which are necessarily attendant upon operations of any magnitude."[22]

Corroborating this positive assessment were reports by doctors from Montreal, Quebec City, and Sherbrooke extolling their success with anesthesia or "narcotism" on men and women during limb amputations and other major surgeries.[23] Just how this new technique was explained to patients is unknown, but they were in effect experimental subjects as their doctors were learning on the job when they operated. Horace Nelson's experiments on animals and himself demonstrate their trial and error nature. As he reported, Nelson, who was lecturer in anatomy at the Montreal School of Medicine and Surgery, along with a dentist named John Horatio Webster, two other doctors, and several medical students, in early 1847 placed a dog into a "state of profound insensibility" using ether, whereupon he cut off a portion of one ear, half flayed the animal, and then amputated a foreleg.[24] This vivisection was interrupted for half an hour as Nelson had to attend a patient, but then continued with the excision of the dog's other ear, although by this time consciousness had returned as evidenced by "his violent efforts and cries giving everyone present to understand, that he was no more *sleeping*." An even more complicated mutilating series of experiments using a white-hot poker was conducted on a second anesthetized dog: "not a moan was heard," he noted, "not the least starting of a nerve was perceptible; the flesh smoked and the iron hissed." The animals were euthanized after their ordeals. Nelson himself inhaled ether over 100 times and administered it to his office pupil, noting changes to facial countenance, eyes, and pulse.

Nelson soon put his experimental knowledge into practice when he, his father (also a physician), and Webster (the dentist), excised a tumour weighing one kilogram from a woman's thigh when etherized, an operation that was punctuated by "loud peals of laughter … [and] by sighs and tears" from the patient; in one week the woman had fully healed.[25] When having a molar extracted by Webster, Nelson himself recalled laughing, singing, gesticulating, and not enduring the usual pain associated with this operation.[26] E.D. Worthington of

20 John C. Warren, "Inhalation of Ethereal Vapour, for the Prevention of Pain in Surgical Operation," (Toronto) *The Globe*, 23 December 1846, 1.

21 See news briefs in *British American Journal of Medical and Physical Science* 2 (1846-1847): 247-248; 296-300; 331.

22 "Inhalation of Sulphuric Ether Vapour," *British American Journal of Medical and Physical Science* 2 (1846-1847): 305.

23 "Employment of Sulphuric Ether Vapour in Montreal, Quebec, and Sherbrooke," *British American Journal of Medical and Physical Science* 2 (1846-1847): 338.

24 Horace Nelson, "Experiments with the Sulphuric Ether Vapour," *British American Journal of Medical and Physical Science* 3 (1847-1848): 34-36. More detail and context of these and other uses of animals in research in Canada are available in J.T.H. Connor, "Cruel Knives? Vivisection and Biomedical Research in Victorian English Canada," *Canadian Bulletin of Medical History* 14 (1997): 35-62.

25 Nelson, "Experiments with the Sulphuric Ether Vapour," 35.

26 Ibid., 36.

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Sherbrooke, Canada East described similar jocularity even when amputating a man's leg below the knee. The patient "made some very witty remarks in answer to questions put to him, converting the scene from one of a most painful to one of an excessively ludicrous character" and who also "kindly volunteered to have half a dozen legs taken off."[27] Other operations using anesthesia were reported in 1847 by James Crawford. On one occasion he noted that no fewer than five other doctors and a "large number of students witnessed the very satisfactory effects of the ether inhalation" on a fourteen-year-old boy, Thomas Cullan, whose leg had been mangled in the spokes of a moving wagon wheel. Suffering so much pain he could not bear anyone to touch his injured limb, he wanted it amputated. When taken to the operating theatre of the Montreal General Hospital, Cullan was administered ether which allowed him to endure the surgery "*without his ever evincing the slightest indication of pain or consciousness that the operation was being performed.*" His only response was a comment that he heard a sound "as if wood was being sawed."[28]

That the rapid uptake and successful use of ether immediately changed the practice and course of surgical operations is incontrovertible. Yet, amazingly, within a year after the announcement of this innovation, American, British and Canadian medical journals conveyed news that an alternative was available, chloroform, which might do a better job of inducing insensibility.[29] The acceptance of chloroform by Canadian doctors was quick; it became the dominant anesthetic of choice for approximately the next three decades. Chloroform produced a deeper and longer lasting state of anesthesia, and its fruity-like odour was agreeable to patients. Compared with ether, doctors found it more portable, cheaper, and requiring less to induce insensibility; it also reduced the likelihood of patients fighting them. There were cultural reasons as well. Chloroform was a Scottish "discovery" by James Young Simpson, in Edinburgh, where many Canadian doctors had received their professional training. Furthermore, McGill University's medical school in Montreal was founded by Edinburgh medical graduates and thus continued to maintain tight connections with its "parent" institution.[30] Practical reasons included the ease in which doctors could prepare chloroform themselves with fairly simple chemical reagents as outlined in their medical literature.[31] It was commercially available for purchase locally, manufactured in Montreal by the S.J. Lyman company. For its professional and general readers, the company's routine advertisements in medical journals and newspapers emphasized chloroform's Scottish origins and its acceptance by the "highest medical authorities in Great Britain" (Fig. 1).[32] Surgeons at the Toronto General Hospital similarly reported that by 1863 they used an imported product prepared by Duncan and Flockhart, the Edinburgh pharmaceutical

27 E.D. Worthington, "Case of Amputation of Leg — The Patient under the Influence of Sulphuric Ether Vapour," *British American Journal of Medical and Physical Science* 3 (1847-48): 10.

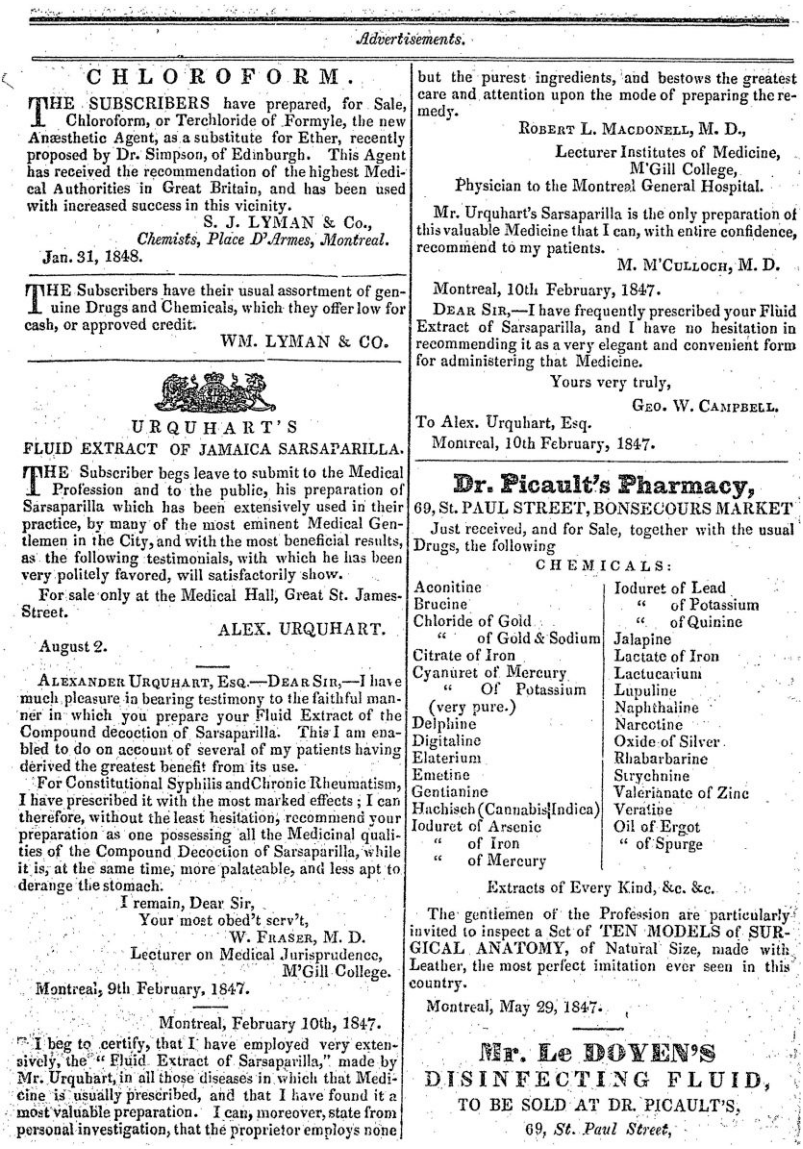
28 J. Crawford, "Contributions to Clinical Medicine," *British American Journal of Medical and Physical Science* 3 (1847-1848): 200-201, emphasis in the original.

29 See for example, J.Y. Simpson, "Discovery of a New Anaesthetic Agent, More Efficient than Sulphuric Ether," *British American Journal of Medical and Physical Science* 3 (1847-1848): 269-271; "Dr. Snow on the Employment of Chloroform," *British American Journal of Medical and Physical Science* 3 (1847-1848): 271-273.

30 Joseph Hannaway and Richard Cruess, *McGill Medicine: The First Half Century 1829-1885* (Montreal: McGill-Queen's University Press, 1996); Richard W. Vaudry, *Andrew Fernando Holmes: Protestantism, Medicine, and Science in Nineteenth-Century Montreal* (Toronto: University of Toronto Press, 2020).

31 "Chloroform," *British American Journal of Medical and Physical Science* 3 (1847-1848): 278.

32 "Chloroform" [advertisement], *Montreal Transcript and Commercial Advertiser*, 26 February 1848, 1.



Advertisements.

CHLOROFORM.

THE SUBSCRIBERS have prepared, for Sale, Chloroform, or Terchloride of Formyle, the new Anæsthetic Agent, as a substitute for Ether, recently proposed by Dr. Simpson, of Edinburgh. This Agent has received the recommendation of the highest Medical Authorities in Great Britain, and has been used with increased success in this vicinity.

S. J. LYMAN & Co.,
Chemists, Place D'Armes, Montreal.
Jan. 31, 1848.

THE Subscribers have their usual assortment of genuine Drugs and Chemicals, which they offer low for cash, or approved credit.

WM. LYMAN & CO.

URQUHART'S
FLUID EXTRACT OF JAMAICA SARSAPARILLA.

THE Subscriber begs leave to submit to the Medical Profession and to the public, his preparation of Sarsaparilla which has been extensively used in their practice, by many of the most eminent Medical Gentlemen in the City, and with the most beneficial results, as the following testimonials, with which he has been very politely favored, will satisfactorily show.

For sale only at the Medical Hall, Great St. James-Street.

ALEX. URQUHART.

August 2.

ALEXANDER URQUHART, ESQ.—DEAR SIR,—I have much pleasure in bearing testimony to the faithful manner in which you prepare your Fluid Extract of the Compound decoction of Sarsaparilla. This I am enabled to do on account of several of my patients having derived the greatest benefit from its use.

For Constitutional Syphilis and Chronic Rheumatism, I have prescribed it with the most marked effects; I can therefore, without the least hesitation, recommend your preparation as one possessing all the Medicinal qualities of the Compound Decoction of Sarsaparilla, while it is, at the same time, more palateable, and less apt to derange the stomach.

I remain, Dear Sir,
Your most obed't serv't,
W. FRASER, M. D.
Lecturer on Medical Jurisprudence,
M'Gill College.

Montreal, 9th February, 1847.

Montreal, February 10th, 1847.

I beg to certify, that I have employed very extensively, the "Fluid Extract of Sarsaparilla," made by Mr. Urquhart, in all those diseases in which that Medicine is usually prescribed, and that I have found it a most valuable preparation. I can, moreover, state from personal investigation, that the proprietor employs none but the purest ingredients, and bestows the greatest care and attention upon the mode of preparing the remedy.

ROBERT L. MACDONELL, M. D.,
Lecturer Institutes of Medicine,
M'Gill College,
Physician to the Montreal General Hospital.

Mr. Urquhart's Sarsaparilla is the only preparation of this valuable Medicine that I can, with entire confidence, recommend to my patients.

M. M'CULLOCH, M. D.

Montreal, 10th February, 1847.

DEAR SIR,—I have frequently prescribed your Fluid Extract of Sarsaparilla, and I have no hesitation in recommending it as a very elegant and convenient form for administering that Medicine.

Yours very truly,
GEO. W. CAMPBELL.

To Alex. Urquhart, Esq.
Montreal, 10th February, 1847.

Dr. Picault's Pharmacy,
69, St. PAUL STREET, BONSECOURS MARKET

Just received, and for Sale, together with the usual Drugs, the following

CHEMICALS:

Aconitine	Ioduret of Lead
Brucine	" of Potassium
Chloride of Gold	" of Quinine
" of Gold & Sodium	Jalapine
Citrate of Iron	Lactate of Iron
Cyanuret of Mercury	Lactucarium
" Of Potassium	Lupuline
(very pure.)	Naphthaline
Delpline	Narcotine
Digitaline	Oxide of Silver
Elaterium	Rhabarbarine
Emetine	Strychnine
Gentianine	Valerianate of Zinc
Hachisch (Cannabis Indica)	Veratine
Ioduret of Arsenic	Oil of Ergot
" of Iron	" of Spurge
" of Mercury	

Extracts of Every Kind, &c. &c.

The gentlemen of the Profession are particularly invited to inspect a Set of TEN MODELS of SURGICAL ANATOMY, of Natural Size, made with Leather, the most perfect imitation ever seen in this country.

Montreal, May 29, 1847.

Mr. Le DOYEN'S
DISINFECTING FLUID,
TO BE SOLD AT DR. PICAULT'S,
69, *St. Paul Street*,

Figure 1 An ad promoting the sale of chloroform in Montreal, Quebec (column 1 at top) that highlights the Scottish discovery by James Y. Simpson of the product's anesthetic properties. Source: *British American Journal of Medical and Physical Science* 4 (1848): back matter.

company that manufactured the original agent pioneered by Simpson.[33] Later in the century, this hospital along with doctors elsewhere in Ontario, used the Lyman's product available in Toronto.[34]

33 "Important Medical Case," (Toronto) *Daily Leader*, 15 January 1863, 2.

34 "Chloroform and Ether Sulphuric — The Lyman Bros. & Co. (Ltd)" [advertisement], *Ontario Medical Journal* 1 (1893): 489.

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Perhaps most importantly, the everyday use of chloroform anesthesia was simple and straightforward. While administering ether typically involved only a soaked sponge being brought close to patient's mouth and nostrils, it was often inconvenient for all concerned. Canadian doctors such as E.D. Worthington occasionally went to great lengths to devise ingenious ways of delivering ether effectively and comfortably such as the apparatus he made from a bellows, a stopcock, a large ox-bladder, a brass tube that formerly was an umbrella handle, and a face mask crafted from thick leather and black silk. Nonetheless Worthington successfully used this contraption "got up in haste," but which presented "withal a very business-like, and, for the country, tolerably professional appearance," in a leg amputation under ether.[35] In comparison, patients typically breathed in chloroform by having a piece of soft absorbent material fashioned in the shape of a cone placed over their mouth and nose on to which chloroform from a small bottle was dropped regularly and slowly to allow evaporation and inhalation until anesthesia commenced. The "ready method" as it was called, allowed the cone to be made from common items such as handkerchiefs, napkins, towels, or pieces of flannel and lint; one doctor even used an item of clothing in the form of his shirt cuff protector.[36] However, more sophisticated homemade delivery devices such as funnels made from lead or leather with absorbent lint inserted were also used on occasion.[37] In the latter decades of the century commercially engineered and manufactured inhaling equipment was adopted primarily in hospital settings as anesthetic methods became more professionalized.

The medical advantages of chloroform fitted well with the quotidian activities of nineteenth-century Canadian doctors, especially in rural settings where "kitchen-table surgery" was the norm. Such clinical sites were often "got up in haste," and may have involved close family members or other persons seconded to assist—often in an impromptu role as anesthetizer. One report noted how a doctor visiting a child "instructed the father, who was a very intelligent man, how to give it [chloroform] himself" to his baby son. In another case at the Pas Mission Reserve in Manitoba, a medical student administered chloroform and a Hudson Bay Company store clerk acted as assistant (but "fell to the floor in a dead faint").[38]

Surgery was, and remains, demanding physical work. In the pre-anesthetic world, surgical handwork embraced the need to be speedy, unwavering, physically strong, and almost brutal in order to succeed. That customary pre-anesthetic operating habits continued during the early days of anesthesia was exhibited in the *tour de force* of Quebec surgeons James Douglas and James Sewell in 1848 when they amputated the legs of a shipwrecked sailor with frostbite in both feet. Tantamount to a public spectacle, the operation under chloroform lasted only three minutes, with each surgeon removing one leg each simultaneously, in front

35 Worthington, "Case of Amputation of Leg," 10.

36 See E.D. Worthington, "Cases of Chloroform," *British American Journal of Medical and Physical Science* 3 (1847-1848): 326-327; James B. Johnston, "Chloroform in Midwifery," *British American Journal of Medical and Physical Science* 3 (1847-1848): 324-325; A.F. Holmes, "Employment of Chloroform," *British American Journal of Medical and Physical Science* 3 (1847-1848): 263-264; Francis W. Campbell, "Letter from London," *British American Journal* 2 (1861): 349-352; James Skirving, "Novel Inhaler," *Canada Lancet* 16 (1883-1884): 237.

37 See W. Marsden, "Chloroform in Quebec," *British American Journal of Medical and Physical Science* 3 (1847-1848): 288-289; Dr. Steane, "Administration of Chloroform," *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 3 (1855-1856): 249-251.

38 See David MacKintosh, "On the Use of Chloroform in Infantile Convulsions," *Canada Medical Journal and Monthly Record of Medical and Surgical Science* 6 (1870): 390; G.T. Orton, "Excision of Knee Joint and Removal of Necrosed Femur," *Canada Lancet* 24 (1891-1892): 99-100.

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of a "large number of medical practitioners, students in medicine, clergymen, &c."[39] Not surprisingly, it was not uncommon for surgical patients to struggle, fight back, or strike their erstwhile assailant (i.e., the surgeon) thus often requiring bodily restraint by numerous surgical assistants. Chloroform was preferred over ether in this regard, as Worthington explained in his own case report. His patient under ether "punched me in the side with his elbow, for a long five minutes, so violently as to make my ribs ache for a week afterwards."[40]

Increasingly, force gave way to finesse in surgery, physicality to patience. As a Montreal doctor recalled in 1866, before chloroform the "surgeon required nerves of steel … to perform his duty on the shrinking, writhing form before him."[41] The use of chloroform afforded surgeons the luxury of time as a new dimension in practice. In 1857 an operation under chloroform for the extirpation of piles or hemorrhoids, for example, took a full fifteen minutes to remove only one of the offending swollen veins to avoid hemorrhage.[42] Surgical practice also increased in scope as new, sometimes invasive procedures were undertaken inside the abdomen, including gynecological operations.[43] This trend broadened during the last decade of the nineteenth century as sources of post-operative infection became better understood, and antiseptic methods and aseptic technique were adopted.[44]

Soon after its introduction, anesthesia also afforded advantages in pediatric surgeries, as children who might have been reluctant or scared, or who refused to be operated on, could be convinced to relent their protests. For eight years, before the advent of anesthesia, a fourteen-year-old Quebec boy with severe and chronic tonsillitis, John Hammond, had obstinately refused to "submit to the pain" of having the two glands in his throat removed, to the point of declaring he would rather die than have the operation.[45] After the physician described the more dramatic operation of double leg amputation under chloroform just done at the same hospital by surgeons Douglas and Sewell, Hammond consented to his own operation in February 1848 "providing he could be made unconscious of pain." He was therefore administered chloroform; shortly after recovering consciousness, he asked:

> "What has been done?" and on being told that one of the tumours had been removed, he shook his head, saying, "Oh, no!" and on being re-assured that such was indeed the case, he said, with the most unfeigned credulity, "*Eh bien! montrez moi le donc;*" and on its being shewn him, his astonishment knew no bounds, and he at once exclaimed, "*Otez moi l'autre tout de suite*."[46]

By the 1880s, there is ample evidence in medical journals of the widespread use of chloroform as an anesthetic across Canada, including the separate island colony of

39 Marsden, "Chloroform in Quebec," 288.

40 Worthington, "Cases of Chloroform," 327.

41 [George E. Fenwick and Francis W. Campbell, ed.], "Review of *Chloroform: Its Action and Administration*, by A.E. Sansom," *Canada Medical Journal and Monthly Record of Medical and Surgical Science* 3 (1866-67): 153.

42 D.C. MacCallum, "Cases in Surgery — Removal of Internal Piles by the Ecraseur Linéaire of Chassaignac," *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 5 (1857): 289-294.

43 Wendy Mitchinson, *The Nature of Their Bodies: Women and Their Doctors in Victorian Canada* (Toronto: University of Toronto Press, 1991), especially chapters 8 and 9.

44 J.T.H. Connor, "Listerism Unmasked: Antisepsis and Asepsis in Victorian Anglo-Canada," *Journal of the History of Medicine and Allied Sciences* 49 (1994): 207-239.

45 Marsden, "Chloroform in Quebec," 289.

46 Ibid.

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Newfoundland.[47] Hospitals also routinely reported recurring costs of purchasing anesthetic agents. The purchase of chloroform in bulk in a six-litre batch for $12.00 for one month in 1889 at the l'Hôtel-Dieu de Québec hospital illustrates its large usage, as only a couple of teaspoonfuls generally were dispensed at a time (approximately 10 ml).[48] In October 1899, the TGH spent almost $50 for chloroform and ether, along with a similar $50 expense six months later.[49]

Despite the utility and pervasiveness of anesthetic techniques, doctors apparently did not exploit their patients for financial purposes. Fee schedules, determined by doctors in their own district, show there was no explicit charge listed for administering an anesthetic during the first few decades after the introduction of ether and chloroform.[50] We can assume that the fee for anesthesia was embedded in the broader fee for a surgical or obstetrical visit. From the 1870s, however, the administration of chloroform became listed as an itemized service in Ontario towns. In 1873, the Orangeville Medical Association authorized a charge of $2.00 for this service; in the 1890s the St. Thomas Medical Association advertised that the use of chloroform ranged in cost from $4.00 to $10.00; and in 1892, the Hamilton Medical Society and Surgical Society developed a sliding scale from $3.00-$5.00 to $10.00 to administer chloroform depending on the annual income of the patient, which ranged from under $1,000 to over $3,000 respectively (see Fig. 2).[51] Even if charging fees for chloroform administration might have augmented a doctor's income, there remained general problems of doctors collecting patient debts.[52] Most doctors in Victorian Canada eked out a comfortable living, but few were truly affluent. In general their incomes were on par with or slightly below clergymen, above that of plumbers, but well below successful lawyers. Around or just over $1,000 per annum was not atypical, which put them in the bottom range of even their own sliding scale of income for their patients.[53]

47 R.E. McKechnie, *Strong Medicine: History of Healing on the Northwest Coast* (Vancouver: J.J. Douglas, 1972), 117-118; Wm. S. Muir, "A Case of Thrombosis of the Utero-Vulvar Canal Ruptured During Labor," *Maritime Medical News* 1 (1888-1889): 22-23; P. Conroy, "Supra-Pubic Lithotomy," *Maritime Medical News* 1 (1888-1889): 34-35; G.E. Coulthard, "Cases in Practice," *Maritime Medical News* 1 (1888-1889) 117-118; N.S.F., "A Case of Oedema of the Vulva During the Last Month of Pregnancy," *Maritime Medical News* 1 (1888-1889): 59.

48 François Rousseau, *La Croix et Le Scalpel: Histoire des Augustines et de l'Hôtel-Dieu de Québec (1639-1892)*, Tome 1 (Sillery, Québec: Septentrion, 1989), 284.

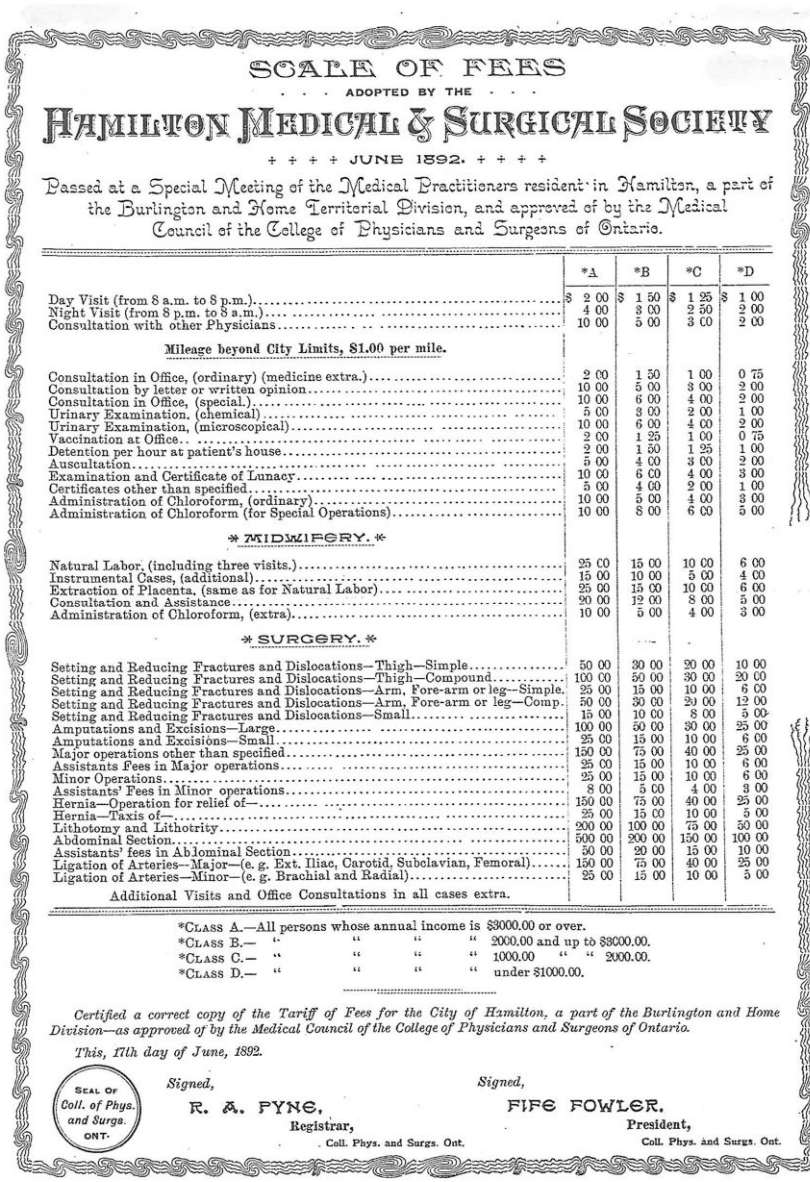
49 The Toronto Hospital Record Group (RG1), Fonds TH 8: Board of Trustees fonds, Series 8.1: TGH/TTH Board of Trustees Minutes, University Health Network Archives (hereafter UHNA-TGH), 2 October 1899; 5 July 1900.

50 For Toronto fees in 1853, see "Editorial Department — Medical Tariff," *Upper Canada Journal of Medical, Surgical and Physical Science* 3 (1853): 126-128. For North York and South Simcoe in 1866, see the medical tariff reprinted "By Order of the Profession" reproduced in Sydell Waxman, "Emily Stowe, Feminist and Healer," *The Beaver* 72 (April-May 1972): 29.

51 "Orangeville Medical Association," *Canadian Medical Times* 1 (1873): 189; "The St. Thomas Medical Association Tariff of Fees," ca. 1890s, personal collection of the author; "Scale of Fees Adopted by the Hamilton Medical Society & Surgical Society, June 1892," personal collection of the author.

52 Charles G. Roland and Bohodar Rubashewsky, "The Economic Status of the Practice of Dr. Harmaunus Smith in Wentworth County, Ontario, 1826-67," *Canadian Bulletin of Medical History* 1 (1988): 29-49; Jacalyn Duffin, *Langstaff: A Nineteenth-Century Medical Life* (Toronto: University of Toronto Press, 1993), 46-58.

53 In July 1886 *The Globe* newspaper of Toronto ran a series of articles about property tax assessments with sarcastic editorial commentary, letters to the editor from concerned residents, and the listing of names and



SCALE OF FEES

. . . ADOPTED BY THE . . .

HAMILTON MEDICAL & SURGICAL SOCIETY

+ + + + JUNE 1892. + + + +

Passed at a Special Meeting of the Medical Practitioners resident in Hamilton, a part of the Burlington and Home Territorial Division, and approved of by the Medical Council of the College of Physicians and Surgeons of Ontario.

	*A	*B	*C	*D
Day Visit (from 8 a.m. to 8 p.m.)	$ 2 00	$ 1 50	$ 1 25	$ 1 00
Night Visit (from 8 p.m. to 8 a.m.)	4 00	3 00	2 50	2 00
Consultation with other Physicians	10 00	5 00	3 00	2 00
Mileage beyond City Limits, $1.00 per mile.				
Consultation in Office, (ordinary) (medicine extra.)	2 00	1 50	1 00	0 75
Consultation by letter or written opinion	10 00	5 00	3 00	2 00
Consultation in Office, (special.)	10 00	6 00	4 00	2 00
Urinary Examination, (chemical)	5 00	3 00	2 00	1 00
Urinary Examination, (microscopical)	10 00	6 00	4 00	2 00
Vaccination at Office	2 00	1 25	1 00	0 75
Detention per hour at patient's house	2 00	1 50	1 25	1 00
Auscultation	5 00	4 00	3 00	2 00
Examination and Certificate of Lunacy	10 00	6 00	4 00	3 00
Certificates other than specified	5 00	4 00	2 00	1 00
Administration of Chloroform, (ordinary)	10 00	5 00	4 00	3 00
Administration of Chloroform (for Special Operations)	10 00	8 00	6 00	5 00
* MIDWIFERY. *				
Natural Labor, (including three visits.)	25 00	15 00	10 00	6 00
Instrumental Cases, (additional)	15 00	10 00	5 00	4 00
Extraction of Placenta, (same as for Natural Labor)	25 00	15 00	10 00	6 00
Consultation and Assistance	20 00	12 00	8 00	5 00
Administration of Chloroform, (extra)	10 00	5 00	4 00	3 00
* SURGERY. *				
Setting and Reducing Fractures and Dislocations—Thigh—Simple	50 00	30 00	20 00	10 00
Setting and Reducing Fractures and Dislocations—Thigh—Compound	100 00	50 00	30 00	20 00
Setting and Reducing Fractures and Dislocations—Arm, Fore-arm or leg—Simple.	25 00	15 00	10 00	6 00
Setting and Reducing Fractures and Dislocations—Arm, Fore-arm or leg—Comp.	50 00	30 00	20 00	12 00
Setting and Reducing Fractures and Dislocations—Small	15 00	10 00	8 00	5 00
Amputations and Excisions—Large	100 00	50 00	30 00	25 00
Amputations and Excisions—Small	25 00	15 00	10 00	6 00
Major operations other than specified	150 00	75 00	40 00	25 00
Assistants Fees in Major operations	25 00	15 00	10 00	6 00
Minor Operations	25 00	15 00	10 00	6 00
Assistants' Fees in Minor operations	8 00	5 00	4 00	3 00
Hernia—Operation for relief of	150 00	75 00	40 00	25 00
Hernia—Taxis of	25 00	15 00	10 00	5 00
Lithotomy and Lithotrity	200 00	100 00	75 00	50 00
Abdominal Section	500 00	200 00	150 00	100 00
Assistants' fees in Abdominal Section	50 00	20 00	15 00	10 00
Ligation of Arteries—Major—(e. g. Ext. Iliac, Carotid, Subclavian, Femoral)	150 00	75 00	40 00	25 00
Ligation of Arteries—Minor—(e. g. Brachial and Radial)	25 00	15 00	10 00	5 00
Additional Visits and Office Consultations in all cases extra.				

*Class A.—All persons whose annual income is $3000.00 or over.
*Class B.— " " " " 2000.00 and up to $3000.00.
*Class C.— " " " " 1000.00 " " 2000.00.
*Class D.— " " " " under $1000.00.

Certified a correct copy of the Tariff of Fees for the City of Hamilton, a part of the Burlington and Home Division—as approved of by the Medical Council of the College of Physicians and Surgeons of Ontario.

This, 7th day of June, 1892.

SEAL OF Coll. of Phys. and Surgs. ONT.

Signed, R. A. FYNE, Registrar, Coll. Phys. and Surgs. Ont.

Signed, FIFE FOWLER, President, Coll. Phys. and Surgs. Ont.

Figure 2 Scale of fees for Hamilton Medical Society & Surgical Society, 1892. Source: Collection of the author.

alleged income of land owners in various occupations to show their net worth (i.e., "personalty"). See "Incomes and Personalty: The Assessments of Some of Our Leading Citizens. The Doctors and Clergymen," *The Globe*, 20 July 1886, 4; 21 July 1886, 8.

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Labour disputes: women and the use of chloroform in obstetrics

Doctors across North America disagreed about the use of anesthesia to spare pregnant women pain during childbirth.[54] Some doctors argued that pain was both natural and beneficial, and that it could be useful to gauge the progress of labour; others believed it was their duty to eradicate pain, treating childbirth like any other surgery. Many women also requested or demanded anesthesia, though some declined it. Another inducement to embrace a painless birth, perhaps, was that it could also be a relatively silent one, given the fact that for most women childbirth remained a "social" occasion within their home.[55] By diminishing the screams and shouts by parturient women, other family members might be spared what could be perceived as a frightening and traumatic event. But fears remained, namely that male doctors might take sexual advantage of women patients while they were insensible.

Suffused through these debates were overlapping notions of pain, as somatic response, and as socio-psychological sense connected to religious sentiment. In the authorized Anglican version of the Bible, Genesis 3:16 declared that God "will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children," which was open to interpretation that giving birth was ordained to be painful. In light of this potentiality, the editor of of a Montreal-based journal invited Abraham De Sola, a prominent Montreal rabbi and biblical scholar, to undertake a philological and exegetical analysis of the Genesis passage to address its perceived religious objections to anesthesia in childbirth.[56] Relying on renderings of the Old Testament in ancient Hebrew, De Sola argued that the Anglican translation "sorrow" should more accurately be understood as "physical labour, toil, or effort, without any reference to pain or sorrow." Thus, the key word should be translated as "travail."[57] But this conclusion was not without qualification. He wrote that

> if the practice of superinducing anaesthesia in labour have the effect of militating, in the remotest degree, against the evident designs of God … as evinced in the laws of nature, and as revealed in the text under consideration,—if it interfere with the natural labour, in any way—if it produce any of those results which may endanger, if not the safety and welfare of the mother, the safety and welfare of her offspring, then it is wrong, unscriptural, and sinful, and should be visited with the same punishment as is merited by those guilty of foeticide or infanticide. But if the practice have the effect only of assuaging the pain or "sorrow" resulting from the travail, then we maintain it is a good, a proper, and a Scriptural practice.[58]

54 For details of this dispute and conflicting perceptions of labour in the US, see Jaqueline H. Wolf, *Anesthesia and Birth in America* (Baltimore: Johns Hopkins University Press, 2005), especially chapter 1.

55 Annmarie Adams, *Architecture in the Family Way: Doctors, Houses, and Women, 1870-1900* (Montreal: McGill-Queen's University Press, 1996), especially chapter 4.

56 Abraham De Sola, "Critical Examination of Genesis III.16 Having Reference to the Employment of Anaesthetics in Cases of Labour," *British American Journal of Medical and Physical Science* 5 (1849-1850): 227-229; 259-262; 290-293. On science versus religion in the context of being an historiographical artifact, see A.D. Farr, "Religious Opposition to Obstetric Anaesthesia: A Myth?" *Annals of Science* 40 (1983): 159-177. But individual clergymen and physicians might have objected. See G.J. Tee, "Correspondence: Religious Opposition to Obstetric Anaesthesia: Hardly a Myth," *Annals of Science* 41 (1984): 179-180. See also Wolf, *Anesthesia and Birth in America*, especially chapter 1.

57 De Sola, "Critical Examination," 229, 262.

58 Ibid., 290.

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De Sola's judgements may have set the minds of many Christian doctors at ease; at the very least his interpretation grounded the use of anesthesia in childbirth primarily as a medical decision within a secular context albeit with possible dire consequences.

In Canada, anesthesia was generally welcome and helpful for both women in cases of difficult childbirth and their accoucheur (the contemporary term applied to physicians assisting in delivery). In January 1848, A.F. Holmes of Montreal delivered a "very large male infant" after his patient of delicate health "fell into what appeared a heavy slumber" following her inhalation of chloroform from a small sponge held close to her nostrils.[59] In Sherbrooke, Canada East, James Johnston related a case of an older woman in difficult labour in which "she begged of me most piteously to give her the chloroform, saying that she never yet experienced such agony as she was then enduring. She could barely allow me time for the necessary examination, so urgent was she to be relieved from suffering."[60] Johnston also occasionally administered chloroform to women experiencing prolonged morning sickness, permitting "some tranquil sleep after which the stomach would be quiet for the remainder of the day."[61]

These cases all ended happily for doctor, mother, and baby, but that was not always the outcome. In 1855 Hamnet Hill of Ottawa was called to attend a pregnant woman whose labour pains ceased after only one bout, whereupon he undertook a physical examination to discover an unexpected abdominal protuberance. "[I]n an instant the horrible truth flashed across me that the uterus had given way at the very first onset of labor, and that the projecting substance was either an elbow or knee of the infant expelled into the cavity of the abdomen," Hill recalled.[62] He summoned two other Ottawa colleagues to confirm and to perform a caesarean section to deliver the baby:

> if ever the blessings of chloroform could be fully realized [Hill declared], it would be in the performance of this direful vivisection, which is thereby divested of three-fourths of much that is so dreadful, and from which the hand of the operator shrinks with intensive horror. Never have I witnessed the more perfect action of the Anaesthetic, not a sigh or groan escaped the patient's lips, and when she awoke to the reality after the performance of the operation which occupied but a short time, emotions of gratitude were among the first indications of returning consciousness.[63]

Unfortunately, the baby was extracted dead, and the mother succumbed two days later.

It is to be regretted that in this case the "blessings of chloroform" were soon overshadowed by the double tragedy that beset this family and household. But that the patient expressed "emotions of gratitude" upon her initial recovery, along with the detail quoted in the previous case that the woman "begged most … piteously" for chloroform, does give voice to women's attitudes at the time. Indeed, the prominent Ontario surgeon William Canniff reported in 1868 how it was his custom to always carry chloroform with him when he attended a midwifery case "to be given if desired by the patient, and the number desirous of having it is

59 Holmes, "Employment of Chloroform," 263-264.

60 Johnston, "Chloroform in Midwifery," 324-325.

61 Ibid., 325.

62 Hamnet Hill, "Rupture of the Uterus, Without Pelvic Deformity, at the Commencement of Labor — Caesarian Operation — Death," *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 2 (1855): 480-481.

63 Ibid.

steadily increasing."[64] Such comments, albeit refracted through doctors' voices, suggest the key agency of women regarding the treatment of their bodies.

The use of anesthesia by Canadian doctors, whether by chloroform or ether, was far from universal in childbirth, however. The "daybook" records of James Langstaff regarding his obstetric cases for the period roughly spanning the late 1840s to the early 1880s reveal that he used either ether or chloroform only five times, which was a low number based on the fact that childbirth attendance accounted for an average of around twelve per cent (about 3,000 cases) of his busy rural medical practice north of Toronto for this period.[65] A particularly complicating debate centred on an "instrumental" labour in which delivery forceps were deemed necessary, and the use of this surgical instrument was often guided by any pain experienced and expressed by the mother as the round blades were inserted and moved around in the birth canal. For Hamnet Hill, the physician who performed the "direful vivisection" described above, such pain was the doctor's "most certain guide, and a most valuable beacon becomes lost to him, if such susceptibility be destroyed by the employment of Chloroform."[66] Yet Archibald Hall of the University Lying-In Hospital in Montreal declared that from 1843 to 1860, which accounted for almost two thousand women admitted, chloroform was only "sparingly used" and prohibited in "all ordinary labours," but was employed "when anything untoward occurs which demands an artificial assistance" such as during "version" (turning the unborn fetus around—six cases) or "forceps cases, after the blades of the instrument have been introduced and locked" (nineteen cases).[67] While a Nova Scotia doctor held in 1877 that chloroform was "indispensable" when forceps were used, C.J. Fox, also of Nova Scotia, in 1892 maintained that while chloroform had "come to stay, … no hard and fast rule can be laid down" in its use in childbirth, for on the one hand he would use it when "pains are remittent" while on the other hand he considered its use in "instrumental labor" not always indicated and often "unadvisable."[68] Elsewhere in the Maritime provinces, G.E. Coulthard, addressing the New Brunswick Medical Society in 1896 as its president, described how in his personal experience of 1,000 obstetric cases only in 211 (21 per cent) of them did he not use chloroform either because the woman refused to have it administered, or he was too late on arrival at the birth.[69]

These accounts suggest how anesthesia was generally accepted but still debated and disputed in the birthing room in Victorian Canada. While difficult to assess, its introduction also seems to have altered the power dynamic between male doctor and female patient, as the latter exercised some control over how anesthetics were used during the birthing process. That debate also intersected with another contemporary one over the advisability of using forceps in difficult deliveries. All indicators suggest that Victorian Canadian doctors were conservative in using both anesthesia and instrumental labours, which other contemporary historical sources such as the detailed obstetrical records of nineteenth-century doctors

64 W. Canniff, "A Few Thoughts Respecting the Treatment of the After-birth," *Canada Medical Journal and Monthly Record of Medical and Surgical Science* 4 (1867-1868): 387.

65 Duffin, *Langstaff*, passim.

66 Hill, "Rupture of the Uterus," 483.

67 Archibald Hall, "Statistics of the University Lying-In Hospital, Montreal," *British American Journal* 1 (1860): 51, 198.

68 R.S. Black, "Notes of Cases on Midwifery," *Maritime Medical News* 9 (1897): 157; C.J. Fox, "Conservatism in Midwifery," *Maritime Medical News* 4 (1892): 126.

69 G.E. Coulthard, "Address Delivered at the Meeting of the N.B. Medical Society," *Maritime Medical News* 8 (1896): 257.

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confirm.[70] These sources temper the view held by Second Wave feminist historians of medicine who argued such technologies were deployed simply to assert the male medical profession's power over perceived competitors such as female midwives.[71]

It remains, however, that the ability for a male doctor to induce total unconsciousness in a female patient was a gendered act—one that might be subject potentially to abuse. The trial of John Horatio Webster in Montreal in 1858 brought great professional and public attention to just such a possibility. Webster was the dentist discussed above who had experimented with anesthesia on animals with Horace Nelson in 1847. A decade later he was accused of sexually assaulting Louisa Chandler (also identified by her married name of Nichols), a patient he had anesthetized prior to dental surgery. He was initially found guilty of rape but upon appeal was convicted of attempted rape, for which he served six months in prison. Historians Karen Dubinsky and Ruth Olson have explained how rape trials in Victorian Canada were legal as well as moral contests, with medical considerations (including proof of penetration) relegated to a relatively minor role.[72] Yet in this case the medical aspects became central as professional propriety and the practice of anesthesia were as much on trial as was Webster himself, for although he was dentist and not a doctor he belonged to that class of "professional gentlemen."[73]

As rape was (and remains) a charged, gendered, and legally and forensically mutable concept, the act presents challenges for historical analysis.[74] Only selected medical facets of this case are thus examined here, drawn from details of the entire trial as published in graphic daily newspaper reports.[75] The testimony of a former patient's spouse and that of several

70 Melville C. Watson, "An Account of an Obstetrical Practice in Upper Canada (with a Report of 1,828 Cases)," *Canadian Medical Association Journal* 40 (February 1939): 181-188, which noted how in only six per cent of the almost 2,000 cases attended did the physician (Walter H. Burritt) use forceps, and that it was not until 1877 did he appear to use anesthesia for the first time during a birth. Hugh M. MacKay, Records of Midwifery Case, 1873-1889, miscellaneous MSS collection, MU 2118, fonds F 2189, Archives of Ontario, show that MacKay used forceps in only eighteen cases of a total 935 deliveries.

71 J.T.H. Connor, "'Larger Fish to Catch Here than Midwives': Midwifery and the Medical Profession in Nineteenth-Century Ontario," in *Caring and Curing: Historical Perspectives on Women and Healing in Canada*, ed. Dianne Dodd and Deborah Gorham (Ottawa: University of Ottawa Press, 1994), 103-134, which incorporates a comprehensive critique of C. Lesley Biggs, "The Case of the Missing Midwives: A History of Midwifery in Ontario from 1795-1900," *Ontario History* 75 (1983): 21-35.

72 Karen Dubinsky, *Improper Advances: Rape and Heterosexual Conflict in Ontario, 1880-1929* (Chicago: University of Chicago Press, 1993); Ruth A. Olson, "Rape — An 'Un-Victorian' Aspect of Life in Upper Canada," *Ontario History* 68 (1976): 75-79.

73 Tracey L. Adams, *A Dentist and a Gentleman: Gender and the Rise of Dentistry in Ontario* (Toronto: University of Toronto Press, 2000); R.D. Gidney and W.P.J. Millar, *Professional Gentlemen: The Professions in Nineteenth-Century Ontario* (Toronto: University of Toronto Press, 1994).

74 See Constance B. Backhouse, "Nineteenth-Century Canadian Rape Law 1800-92," in *Essays in the History of Canadian Law*, Vol. 2, ed. David H. Flaherty (Toronto: University of Toronto Press, 1983), 200-247; Elizabeth Anne Mills, "One Hundred Years of Fear: Rape and the Medical Profession," in *Judge Lawyer Victim Thief: Women, Gender Roles and Criminal Justice*, ed. Nicole Hahn Rafter and Elizabeth Anne Mills (Boston: Northeastern University Press, 1982), 29-59; Roy Porter, "Rape — Does It Have a Historical Meaning?" in *Rape*, ed. Sylvana Tomaselli and Roy Porter (London: Basil Blackwell, 1986), 216-236, 270-279.

75 A legal outline of the case is available in M. Mathieu, *Rapports Judiciaires Revisés de la province de Québec*, VII (Montréal: C.O. Beauchemin & Fils, 1893), 188-191. English newspaper reports of court proceedings are contained in the (Montreal) *Daily Transcript*. See "Painful Case," 28 September 1858, 2; "Queen's Bench,"

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doctors, including the experienced and well-respected Wolfred Nelson (father of Horace Nelson), may have helped blunt the case for the prosecution; it also highlighted the social and moral dimensions of the proceedings. Nelson stated that a patient accused him of violating her although "many of her neighbours were witnesses to the operation." Similarly, James Goodrich testified that his wife believed Webster had molested her even though he, the husband, had his finger on her pulse for the duration of the dental procedure. Another physician testified that he had "known ladies use language, when under the influence of chloroform, that they would blush to hear at any other time. They were most respectable ladies; the language was awful; where they got the language I don't know."[76]

The jury and judge were somewhat moved by such statements. The foreman declared that witnesses should be required to be present when anesthesia was administered to women for "whilst, no doubt, females laboring under the influence of Chloroform may have occasionally been abused and insulted, it is equally true, that others, after recovering from its effects, have, in many instances, been known to labor under the delusion that they had been abused and insulted, when there was conclusive evidence to the contrary."[77] In his summation, the presiding judge declared that "every medical man" should use chloroform with "the extremest caution," and should they use it without witnesses present and are "exposed to false and groundless charges on this account they have only to blame themselves. The necessary precautions they must adopt. One or two women, or other competent persons, should always be present to attest what is done—and this in consequence of the peculiar qualities of the medicine [chloroform]."[78] Such judicial advice was well-founded, but as this discussion has shown, where anesthesia was used by physicians, often colleagues or students, patients' spouses or other family members, or neighbours were present if not actually assisting the doctor even in private homes where procedures could be communal events; certainly in hospital settings many witnessed an operation as it was typically conducted in an amphitheatre-style room.

Subsequent professional debate centred on the possible physiological causes for Louisa Nichols's belief and accusation against Webster. Editorial analysis in the Montreal-based *Medical Chronicle* contrasted chloroform and ether to show their effects differed.[79] As it explained, in some people chloroform induced "very pleasurable sensations, and agreeable hallucinations," but ether produced in others a sense of excitement with the "*sexual function [becoming] the special seat of stimulation.*" Relaxation of the mucous tissues resulted in discharge from their surfaces, "*particularly noticed in the mucous membrane of the generative*

29 September 1858, 2; "Queen's Bench," 1 October 1858, 2; "Queen's Bench," 5 October 1858, 2; "Queen's Bench," 8 October 1858, 2; "Queen's Bench," 21 October 1858, 2; "Fifth Judge," 8 December 1858, 2; "Webster Case," 10 December 1858, 2; "Queen's Bench," 25 March 1859, 2. See also reprint of court transcript from *Montreal Herald* in "Criminal Assault by a Dentist," *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 6 (1858-1859): 230-239. This case may have been a copycat one, as only a couple of years previous an almost identical one was prosecuted in Pennsylvania. See *Trial and Conviction of Dr. Stephen T. Beale* (Philadelphia: T.S. Collins, Jr., 1855).

76 "Criminal Assault by a Dentist," *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 6 (1858-1859): 238.

77 "Queen's Bench," *Daily Transcript,* 8 October 1858, 2.

78 "Queen's Bench," *Daily Transcript,* 25 March 1859, 2.

79 "The Late Trial of Dr. Webster for a Criminal Assault," *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 6 (1858-1859): 275-281. The following quotations in this extended discussion by co-editors of the journal are all drawn from this editorial, especially 277-280, with italics in the original.

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organs of women." Furthermore, because the plaintiff indicated she was menstruating, the editor asserted she was "peculiarly susceptible to excitement of these [generative] organs on the suspension of the will, and, as a consequence, her dreams or delusions would take their complexion from the excited sexual function." He also stated that his hospital had operated on "prostitutes while under its [chloroform] influence—we have seen educated gentlemen and ladies, of refined manners, placed under its influence" without any of these patients exhibiting an "indelicate action or gesture … [or] the utterance of obscene or improper language." In short, this editor maintained that the trial seemed to take for granted that Webster had used chloroform without seeking clarification from expert medical witnesses—including the physician who described this language—about the precise anesthetic agent, or even determining whether Webster had used a mixture of chloroform and ether, as was a "very favorite combination with American Dentists." Based on this reasoning, along with the "slight evidence" presented by the prosecutor in court, the co-editors of this Canadian journal determined that Webster had been wrongly convicted.

The editor of the prestigious *Boston Medical and Surgical Journal* disagreed with the distinction in anesthetic agent, saying that during menstruation the "administration of any stimulant, even a couple of glasses of champaigne wine, would have been likely to create erotic ideas, and to vividly impress the patient with the belief of their reality." Nevertheless, he concurred that the verdict was not justified by the evidence.[80]

The sleep of death? anesthesia, risk, and surgical accidents

Just how many times anesthesia was used in Canada since its introduction in 1847 until the end of the century is impossible to calculate. Its employment by doctors in farmhouses, homes, and hospitals across the country for everything from tooth extractions, to childbirth, to amputations of limbs and other major surgeries must have resulted in many thousands of cases—and for the overwhelming majority of them it was safe, successful, and without incident. But there were catastrophic exceptions when a fatality occurred, which like the case of rape, demanded medical and legal responses in addition to grabbing the attention of the populace through newspapers.

Such events and reactions to them were not unique to Canada as both American and British historical studies dealing with anesthesia make clear. Martin Pernick has argued that in the US a "calculus of suffering" evolved which was a rational and numerical approach to evaluating the cost (the ultimate being death) and benefits of inhalation anesthesia. This utilitarian framework for risk assessment sanctioned a statistical methodology that was perceived as value-neutral, while it was consistent with a growing faith in objective science.[81] In analyzing Britain, Ian Burney similarly concludes that cost-benefit thinking played out, but with a complicating factor of the objective management of "passions and anxieties" among patients and doctors alike. Noting an almost unbridled national enthusiasm for anesthesia, a movement grounded in cost-benefit ideology evolved among doctors to restrict its use within reason.[82]

80 "The Recent Trial for Rape at Montreal," *Boston Medical and Surgical Journal* 59 (1858): 346-347, reprinted in *Medical Chronicle or, Montreal Monthly Journal of Medicine and Surgery* 6 (1858): 427-428; "Alleged Criminal Assault by a Dentist," *Boston Medical and Surgical Journal* 59 (1858): 287.

81 Pernick, *Calculus of Suffering*.

82 Ian Burney, "Anaesthesia and the Evaluation of Surgical Risk in Mid-Nineteenth Century Britain," in *The Risks of Medical Innovation: Risk Perception and Assessment in Historical Context*, ed. Thomas Schlich and Ulrich Tröhler (London: Routledge, 2006), 38-52.

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Burney's analysis also included extensive scrutiny of the dynamics and tension between the profession and the public through coroners' inquests over suspected anesthesia deaths.[83]

Pernick and Burney's conclusions were facilitated by large numbers of patient cases and other available data; for example, in Britain for the single year marking the fiftieth-anniversary of inhalation anesthesia's introduction, the number of deaths due to chloroform totalled approximately 100. In comparison, primary historical evidence for discussion of similar aspects in Victorian Canada is relatively scant, but nonetheless tentative trends, even if impressionistic, may be discerned. An estimated eighteen persons died due to inhalation anesthesia in Canada from 1847 to 1901, evenly split between men and women. Most deaths for this 50-year period occurred during surgical operations in major metropolitan hospitals in Toronto and Montreal; dental offices were also the location of several others. In no instance was a doctor or dentist held legally responsible for any death, as returned verdicts noted that all such unfortunate events were accidental. These details are drawn from reported or documented deaths as revealed in coroners' inquests, which in turn were recounted in medical journals and/or newspapers. These public inquiries aimed to investigate the circumstances of a suspicious death, required jurors to examine the deceased body, heard testimony from witnesses, determined who if anyone might have been to blame, and made possible remedial recommendations to avoid any similar future occurrences.[84]

Evidence from coroners' inquests reveals important personal and professional information relating to anesthesia in Victorian Canada, surgical accidents, and social attitudes to risk and surgical safety; it also, even if through the testimony of witness proxies, often helps us to understand the voices of victims. As reported in the *Daily Leader* newspaper of Toronto in 1863, Richard Humphreys, a railway worker, agreed to the excision of a tumour at the TGH, but died soon after being chloroformed. At the coroner's inquest a fellow patient testified that Humphreys had consented to be chloroformed but had reservations about the process; still, Humphreys declared he was "prepared to die as all should be who got operated on under the influence of chloroform."[85] Six Toronto physicians gave evidence that proper procedure was followed in every detail; similarly, seven medical student witnesses from Victoria College and the Toronto School of Medicine provided a corroborative collective statement. The jury consisting of "six men from amongst the intelligent patients in the hospital and six from the neighbourhood" exonerated the doctors, concluding that Humphreys died from "apoplexy, induced by chloroform."

Testimony from other inquests reveals a similar pattern of patients' fears yet resignation. Again as reported in the *Daily Leader*, in 1858 John McChesney of Toronto needed six teeth extracted but wanted chloroform as he was "not strong enough" to endure the operation. McChesney's brother testified at the inquest that he made clear to his brother there was a "risk attending" the use of chloroform.[86] The dentist recommended a physician to administer it, but when McChesney asked the physician if he would "take all the responsibility" for

83 Ian A. Burney, *Bodies of Evidence: Medicine and the Politics of the English Inquest, 1830-1926* (Baltimore: Johns Hopkins University Press, 2000), especially chapter 5.

84 On the coroner's inquest within Canadian law, see Myles Leslie, "Reforming the Coroner: Death Investigation Manuals in Ontario, 1863-1894," *Ontario History* 100 (2008): 221-238; Guy St-Denis, "The London District and Middlesex County, Ontario, Coroner's Inquests, 1831-1900," *Archivaria* 31 (1990-1991): 142-153.

85 "Coroner's Inquiry," *Daily Leader*, 14 January 1863, 2; "Important Medical Case," *Daily Leader*, 15 January 1863, 2.

86 "Death from Chloroform," *Daily Leader*, 2 February 1858, 2.

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giving chloroform, he declined; after further conversation, McChesney acceded to the operation, during which he died. The jury apportioned no blame to those involved as the patient had "voluntarily inhaled" the chloroform. The death of John Gould in 1867, another TGH surgical patient, was witnessed by 180 medical students, twenty-four doctors, and two or three citizens all of whom were crowded into the amphitheatre-style operating room. The *Daily Leader* report of Gould's inquest occasioned a reflective and summative passage, which captured the implicit cost-benefit logic of Canadian patients maintained by their American and British counterparts:

> the most pains-taking and clever physician or surgeon cannot honestly give a positive assurance to his patient that there is no danger attending the administration of chloroform. It must be borne in mind however that before the introduction of these pain-killing agents, patients often died on the table during the operation. …There is no question it has proved a great boon to suffering humanity; that thousands have undergone the most terrible operation and have made good recoveries. … And considering the enormous numbers all over the civilized globe who are daily placed under the influence of chloroform, the percentage of deaths is exceedingly small—perhaps not one in every twenty thousand.[87]

Doctors and patients both benefited greatly from anesthesia, but the cost to the patient was catastrophic when things went wrong; such frightening and unfortunate events also had consequences for doctors who responded to these dire adverse events in several ways. On immediately recognizing that a patient was in difficulty, they quickly resorted to many potential remedial measures, which were a combination of established and novel resuscitation techniques. Believing that patients were in a similar state as a deep faint, giving stimulants such as amyl nitrate, ammonium smelling salts, and spirituous liquors was one long-standing approach, as was quickly exposing the patient to a plentiful supply of fresh air. With the invention of portable hand-cranked galvanic generators in the mid-Victorian period, electrotherapy became both an accepted professional and household medical practice.[88] Accordingly, electrical stimulation was increasingly deployed in attempts to revive patients. Hands-on methods were also used, such as the Sylvester technique developed in the late-1850s to bring around victims of drowning and suffocation, along with that devised by another doctor (Nélaton) who maintained that revival could be achieved by holding the patient upside down with *tête en bas*.[89]

Attempts to revive patients seemingly dead in homes and hospitals could be well-meaning, dramatic, and heroic, but regrettably usually ineffectual. When John Gould was seen to be in difficulty in the TGH's operating theatre, many of the almost 200 medical students observing the event scrambled to smash windows to ventilate the room but to no effect.[90] William Bowman recalled the frustrating events surrounding the death of one patient under anesthesia at MGH who at the "moment of cessation of breathing" was plied fresh air and ammonia; "magneto-electricity" was then proposed but the machine was out of order, requiring twenty minutes to locate another.[91] In the case of patient Richard Humphreys at TGH, the "ordinary

87 "The Chloroform Case," *Daily Leader,* 15 March 1867, 2; "The Chloroform Case," *Daily Leader*, 16 March 1867, 2.

88 J.T.H. Connor and Felicity Pope, "A Shocking Business: The Technology and Practice of Electrotherapeutics in Canada, 1840s to 1940s," *Material Culture [History] Review* 49 (1999): 60-70.

89 On emergency respiration, see Henry M. Lyman, *Artificial Anesthesia and Anesthetics* (New York: William Wood, 1881), 52.

90 "The Chloroform Case," *Daily Leader,* 15 March 1867, 2.

91 [William Bowman], "Editorial," *Canada Lancet* 1 (1863): 5.

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appliances were immediately brought into requisition, viz, galvanic battery, stimulants, &c. … Every means that could be devised was most assiduously adopted by the medical men, but all to no purpose."[92] More physical means of revival had mixed results. The Sylvester method was used for up two hours on one patient, who had also requested chloroform prior to her operation, but "without success."[93] However, the Nélaton manoeuvre obtained a better result on two separately reported occasions. In 1874, a doctor in the rural Ontario town of Simcoe was suturing a serious leg wound of a boy who had been chloroformed but then ceased breathing and was without any pulse. The ensuing action involved the doctor's son who was assisting in the operation, the patient's brother, and a female neighbour. The physician in charge related how as the boy was already lying on a sofa

> it was only the work of an instant to place his head on the floor, and direct my son to hold his legs in the perpendicular position. An elder brother sitting by a window was directed to throw it open; cold water at hand was dashed on the face, and fortunately without difficulty I was enabled to grasp and keep protruded the tongue with the thumb and finger of left hand; with my right I made pressure alternately on the thorax and abdomen, whilst Mrs. G. quietly and intelligently elevated and depressed the arms, settling to the work as coolly as if she had been a member of the staff of the Royal Humane Society for years….[94]

This activity was maintained for twenty minutes until the patient regained consciousness and vomited but then fell into a calm sleep. Another successful recovery began by the attending doctor exclaiming to his colleagues, "Suspend the operation. He's dead!" before commanding his assistant to mount the table and elevate the patient by his feet.[95] He and another attending physician maintained artificial respiration for a quarter of an hour following. With the patient fully recovered, the operation proceeded as planned.

But what caused sudden death or near-death in some persons and not in others? Was it a respiratory issue, or a cardiac one? Confounding these fundamental questions was the fact that how chloroform anesthesia worked on the body was unknown. As Christopher Lawrence has shown, British practitioners delved into the possible explanations for deaths under anesthesia by experimentation and by reviewing numerous hospital case records. Not until the twentieth century, however, did it become accepted that cardiac failure due to ventricular fibrillation was the problem.[96] Canadian physicians similarly struggled to explain the why and how of the physiology, pathology, and psychology involved. At an 1883 meeting of the New Brunswick Medical Society, John Gaynor expounded on his views of the mechanism of chloroform anesthesia based on scientific, not clinical grounds. His explanation was a complex and somewhat opaque argument of how chloroform at first stimulated the psychical, nervous, muscular, and circulatory functions, but that gave way to sedation as different areas of the brain and spinal cord became affected. Along the way of this overarching process, he invoked a metaphor based on a then recent technological invention, noting the existence of a "psycho-material telephone between matter

92 "Important Medical Case," *Daily Leader*, 15 January 1863, 2.

93 "Death from Chloroform," *Montreal Gazette*, 2 March 1863, 2; "Death from the Inhalation of Chloroform," *Montreal Gazette*, 3 March 1863, 2.

94 Charles Wm. Covernton, "Successful Case of Resuscitation from Chloroform Narcosis — Nélaton's Method," *Canada Lancet* 7 (1874-1875): 194.

95 W. Wade, "Nélaton's Method of Resuscitation from Chloroform Narcosis — Successful Case," *Canada Lancet* 7 (1874-1875): 166.

96 Lawrence, "Experiment and Experience in Anaesthesia," 285*ff*.

and mind."[97] Over a decade later, doctors still muddled through their murky understanding of the mind-body connection as related to anesthesia, as was clear in an essay that invoked the psychosomatic theories of renowned Canadian alienist (psychiatrist) Richard M. Bucke.[98]

Laboratory investigation was not yet developed in Canada throughout most of the Victorian era, but one avenue of inquiry pursued, although often unhelpful, was interpretation of post-mortem analyses of anesthesia's victims. One report concluded that "no organic lesion was discoverable" to account for the patient's death.[99] Another merely concluded that "paralysis of the heart" was the cause.[100] As these post-mortem examinations were often conducted under the terms of a coroner's inquiry, one aim of which was to assign culpability if found, some physicians were ambivalent if not skeptical about any clinical information that they revealed. "I have often suspected" wrote one, "that the very natural desire to escape blame has sometimes materially aided the microscope in detecting some fatty degeneration of the muscular fibres of the heart, which one sees frequently reported as having been found at the autopsy."[101] This attitude was not unique to Canadian doctors, however, as British practitioners, despite their greater access to extensive clinical research, also had little faith in the explanatory utility of results of post mortem pathological examinations.[102]

Anesthesia "specialized" and "hospitalized" at the end of the century

By the closing decades of the nineteenth century there was continuing general agreement among Canadian doctors of the utility of inhalation anesthesia, but this consensus was divided regarding important questions prompted even by the low number of deaths it had caused across Canada. Issues revolved around key questions of who, what, and how. The matter of who related to the person administering the anesthetic. As one inquest in 1864 revealed, the practitioner delivering the anesthetic held qualifications from a questionable American medical school that graduated doctors after only a six-month diploma program; the jury then recommended that no one should administer chloroform except a physician.[103] Common sense enough, but as we have seen in rural and remote areas, on occasion a family member or some other readily available non-physician might be enlisted to administer chloroform. Some Canadian doctors advocated that at least two physicians should undertake operations, with one seeing primarily to the anesthetic and the pulse and general condition of the patient. Again, this was perhaps commendable for city-based doctors, but problematic for a doctor in country districts and small towns. "It is not always the case," wrote a rural

97 John J. Gaynor, "Chloroform as an Anaesthetic — Its Physiological Action and Therapeutic Value," *Canada Lancet* 16 (1883-1884): 66.

98 Dr. Duncan, "Chloroform Anaesthesia," *Dominion Medical Monthly and Ontario Medical Journal* 8 (1896-1897): 314-316. On Bucke, see S.E.D. Shortt, *Victorian Lunacy: Richard M. Bucke and the Practice of Late-Nineteenth Century Psychiatry* (Cambridge: Cambridge University Press, 1986).

99 "Death from Chloroform," *Canada Lancet* 11 (1878-1879): 313.

100 "Death from the Inhalation of Ether," *Canada Lancet* 12 (1879-1880): 121.

101 A.B. Atherton, "The Administration of Chloroform," *Canada Lancet* 14 (1881-1882): 164.

102 Burney, *Bodies of Evidence*, 134-136.

103 "Singular Death from Chloroform," *Daily Leader*, 10 August 1864, 2; Francis W. Campbell, "On the Administration of Chloroform," *Canada Medical Journal and Monthly Record of Medical and Surgical Science* 1 (1864-1865): 156-161.

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physician, "that medical men are so friendly that they can call upon each other at a moment's notice … and even if such were secured, it would generally be difficult to obtain from the patient an extra fee for them."[104] Thus professional collegiality along with the ethics of fee-splitting might undermine anesthetic safety.

Also complicating the question of who was the fact that often in hospital settings the task of inducing anesthesia fell to a junior doctor who strictly speaking may not yet have been licensed. Another inquest, for example, revealed that the hospital house surgeon involved was indeed a recent Toronto university medical graduate who had not yet passed all his licensing examinations. Thus he was technically not registered under the Ontario Medical Act and was ineligible for a public hospital appointment. However, the *Canada Lancet* noted this regulation was more honoured in the breach than in its observance.[105] A corollary of this issue was the apparent lack of training for medical students concerning anesthesia methods, for "[m]any a student goes through college, passes his examination and receives his diploma, who has never administered an anaesthetic in his life." Further, by observing the procedure if it went smoothly, the student "learns to think more lightly of the matter than its importance demands."[106]

Concern over the safety of chloroform forced Canadian doctors much like their British colleagues to reconsider choosing between it and ether as the anesthetic agent, and depending on the choice of what agent, to reconsider how best to administer it, for commercially made instruments were increasingly being marketed as safer for both. Certainly, chloroform was embedded in Canadian practice by the 1880s so much so that in Quebec "*chloroformisateur*" and "*salle de chloroformatisation*" were routine terms used to apply to anesthetization.[107] However, its hegemony began to be challenged with, for example, a *Canada Lancet* editorial wondering if it could "be disarmed of its danger to life."[108] The matter was debated at the fourteenth annual meeting of the Canadian Medical Association in Halifax, Nova Scotia in 1881, but without any consensus.[109] By 1897, the use of chloroform had been eclipsed by ether in most major Canadian hospitals, yet the former was still usually the choice of the doctor in private general practice mostly owing to the cost of purchasing equipment needed for its administering. "No conscientious man will scruple about ten dollars for an inhaler. … We strongly hold that every practitioner should possess an ether inhaler, if not [a] Clover's, say, a more simple one, … and give the ether a fair trial" opined one major journal in the hope of appealing to non-hospital doctors (see Fig. 3).[110]

Hospital adoption of mechanical means of inducing anesthesia either by ether or chloroform had its own developmental stages.[111] The English-designed and commercially built Clover inhaler was first used in the MGH in 1886, replacing a "dirty contrivance made of

104 Atherton, "Administration of Chloroform," 164.

105 "A Death Under Chloroform Anaesthesia," *Canada Lancet* 35 (1901-1902): 266-268. In Québec, medical students were not allowed to administer chloroform as "un médecin responsable … en est exclusivement chargé." See "Anesthésie chloroformique," *L'Union Médicale du Canada* 11 (1882): 431.

106 [Editorial], *Maritime Medical News* 1 (1889): 89.

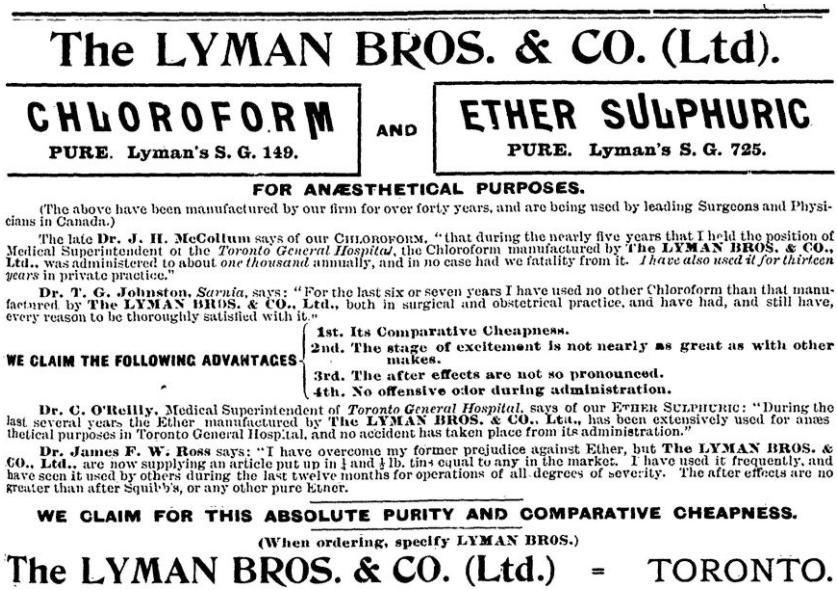
107 Denis Goulet, François Hudon, et Othmar Keel, *Histoire de l'Hôpital Notre Dame de Montréal, 1880-1980* (Montréal: VLB Editeur, 1993), 180.

108 "Chloroform Narcosis," *Canada Lancet* 7 (1874-1875): 155-156.

109 "Canada Medical Association," *Canada Lancet* 14 (1881-1882): 394.

110 "The Choice of an Anaesthetic," *Dominion Medical Monthly and Ontario Medical Journal* 9 (1897-1898): 923-924.

111 On anesthetic devices, see K. Bryn Thomas, *The Development of Anaesthetic Apparatus* (Oxford: Basil Blackwell Scientific, 1975).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FOR ANÆSTHETICAL PURPOSES.
(The above have been manufactured by our firm for over forty years, and are being used by leading Surgeons and Physicians in Canada.)
The late Dr. J. H. McCollum says of our CHLOROFORM, "that during the nearly five years that I held the position of Medical Superintendent of the Toronto General Hospital, the Chloroform manufactured by The LYMAN BROS. & CO., Ltd., was administered to about one thousand annually, and in no case had we fatality from it. I have also used it for thirteen years in private practice."
Dr. T. G. Johnston, Sarnia, says: "For the last six or seven years I have used no other Chloroform than that manufactured by The LYMAN BROS. & CO., Ltd., both in surgical and obstetrical practice, and have had, and still have, every reason to be thoroughly satisfied with it."
WE CLAIM THE FOLLOWING ADVANTAGES
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Dr. C. O'Reilly, Medical Superintendent of Toronto General Hospital, says of our ETHER SULPHURIC: "During the last several years the Ether manufactured by The LYMAN BROS. & CO., Ltd., has been extensively used for anæsthetical purposes in Toronto General Hospital, and no accident has taken place from its administration."
Dr. James F. W. Ross says: "I have overcome my former prejudice against Ether, but The LYMAN BROS. & CO., Ltd., are now supplying an article put up in ½ and ¼ lb. tins equal to any in the market. I have used it frequently, and have seen it used by others during the last twelve months for operations of all degrees of severity. The after effects are no greater than after Squibb's, or any other pure Ether.
WE CLAIM FOR THIS ABSOLUTE PURITY AND COMPARATIVE CHEAPNESS.
(When ordering, specify LYMAN BROS.)
The LYMAN BROS. & CO. (Ltd.) = TORONTO.

Figure 3 An ad promoting the sale of both chloroform and ether as anesthetic agents emphasizing the safety record of the former, despite numerous reports of deaths connected to its use in surgery. Source: *Ontario Medical Journal* 1 (1893): 489.

leather with a sponge inside it."[112] A decade later James Bell, a preeminent Montreal surgeon at both the older General Hospital and the newly built modern Royal Victoria Hospital, decried the use of the Clover device as "even in the most careful hands it is a dangerous instrument," and owing to its design it was impossible to clean and sterilize: "Patients go on, one after another, respiring through the same filthy mask and the same rubber bag, each one adding his quota of mouth secretions, perhaps syphilitic, cancerous or tubercular."[113] Its only "redeeming" feature, Bell suggested, was that it economized the use of ether, "a small matter" compared with the patient's welfare. Bell apparently advocated a simple aluminium cone that had inserted in it absorbent cotton or gauze, with the mouthpiece covered in stockinette; the cone could be sterilized and the gauze and stockinette replaced for each patient, reflecting the new requirements of aseptic procedure, a point noted by others.[114] Elsewhere in Canada other hospitals also opted for other European anesthetic apparatus such as that of Krohne and Seseman.[115] Senior administrators of major urban hospitals were granted extended leave to travel to Europe to purchase these and other medical instruments.[116] Another international impetus for switching to ether came from the US, as

112 W.B. Howell, *F.J. Shepherd — Surgeon: His Life and Times* (Toronto: J.M. Dent and Sons, 1934), 180-181.

113 James Bell, "Note on a New Ether Inhaler," *Montreal Medical Journal* 23 (1894-1895): 833-835. For analysis of this "modern" hospital, see Annmarie Adams, *Medicine by Design: The Architect and the Modern Hospital, 1893-1945* (Minneapolis: University of Minnesota Press, 2008).

114 C.J.H. Chipman, "Ether as a General Anaesthetic," *Ontario Medical Journal* 3 (1895): 367-368.

115 "Anesthésie," *L'Union Médicale du Canada* 33 (1904): 413.

116 J.T.H. Connor, *Doing Good: The Life of Toronto's General Hospital* (Toronto: University of Toronto Press, 2000), 128.

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American doctors had always favoured this agent. Discussion of doctors' propensity for chloroform despite the deaths attributed to it in both Canada and the US prompted a New York-based journal to label its use as potentially "criminal."[117]

Resolution of the questions of who, what, and how followed two complementary paths. Doctors in private practice whether in urban or rural areas continued the established tradition by administering anesthetic using a modified ready method that replaced the cloth cone with gauze wrapped around a wire basket face-mask on to which either chloroform or ether was dropped from a bottle. Canadian physician equipment and supplies companies readily sold all necessary items well into the mid-twentieth century.[118] Anesthesia in hospital-based practice, however, broke with tradition and paved the way for a new medical specialty, in part based on more complex forms of instrumental delivery methods, along with a consensual distribution of labour in the operating room. As a 1900 editorial in the *Dominion Medical Monthly* heralded this trajectory, the "trend of opinion in the current times is towards specialism in this part of medical practice, and rightly so."[119] In his address to the Maritime Medical Association the following year, Alexander Primrose of the University of Toronto underscored this trend when he declared that as an operating surgeon he had learned "to be content to leave the choice of an anaesthetic at my operations to the anaesthetist. … Thus I have come to the conclusion that for the operating surgeon it is rather the choice of an anaesthetist than the choice of an anaesthetic that concerns him."[120] The choice of the term "anaesthetist" mirrored its use in British medical circles, but its adoption in Canada marked a watershed in the creation of the new specialty.

The decision to leave matters anesthetic to the anesthetist was ostensibly grounded in the debate over the choice of anesthetic agents and their delivery, what Primrose called a "battle royal." However, in the hope of reducing surgical risk and accidents thereby increasing patient safety, anesthetic methods generally had become more involved and demanding. Surgeons were therefore increasingly content to relinquish some of their dominating power to another in the operating room. Capturing these trends and complexities is a single-page document formulated and in use at the TGH in 1900. The "Anaesthetic Chart" (Fig. 4) lists about seventy instruments, utensils, medicinal agents, and details related to both the patient and the conduct of the operation. This document was both a pre-operative check-list and a post-operative surgical record: it identified all that might be used in resuscitating patients, their personal and medical history, and specifics about the anesthetic process and its outcome. It required the attending anaesthetist, who was to be an MD, to sign off on it, underscoring its clinical significance to say nothing of its potential legal status. Completed forms of this type have not survived for historical analysis, but it is known that they were "widely adopted" in practice.[121]

Remuneration for the fledgling specialist anesthetist was as low as $2.00 but typically $5.00 to $10.00 per administration while most surgeons received around $200.00 an operation. This "division of the proceeds" was questionable according to one journal editor for

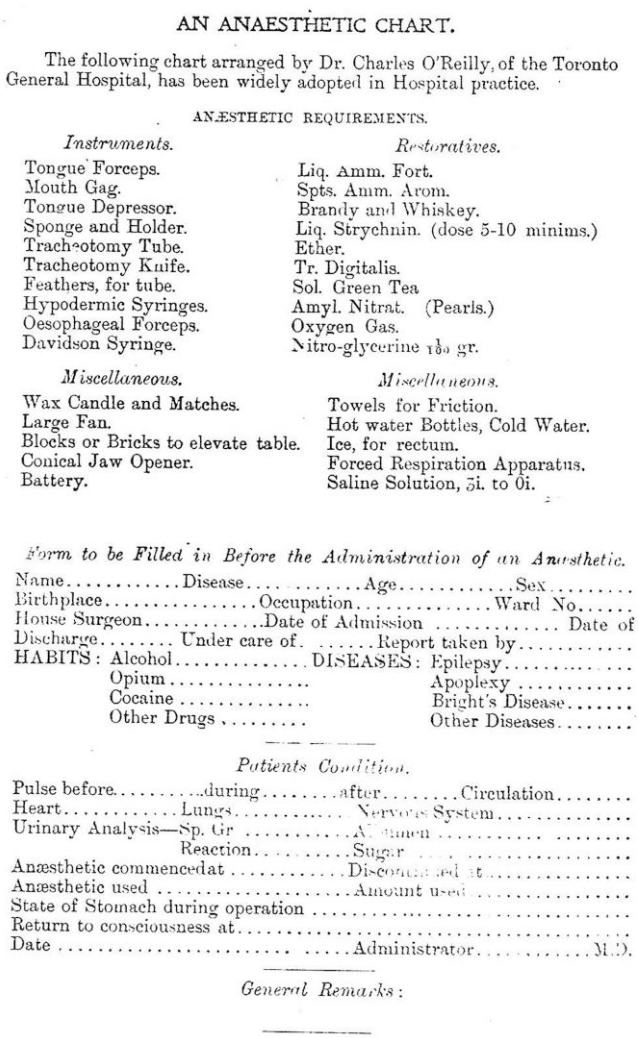
117 "Chloroform Deaths," *Medical Record* 17 (1880): 127.

118 See Ingram & Bell catalogue S-59, *Instruments, Surgical Equipment, Supplies, for Physicians…* (Toronto, ca. 1959), 106; 196. On the origins of such sources, see Claire L. Jones, *The Medical Trade Catalogue in Britain, 1870-1914* (London: Pickering and Chatto, 2013).

119 "The Compensation of the Anesthetist," *Dominion Medical Monthly and Ontario Medical Journal* 14 (1900): 87.

120 A. Primrose, "Address in Surgery," *Maritime Medical News* 13 (1901): 267.

121 "An Anaesthetic Chart," *Canada Lancet* 34 (1900-1901): 636-637.



AN ANAESTHETIC CHART.

The following chart arranged by Dr. Charles O'Reilly, of the Toronto General Hospital, has been widely adopted in Hospital practice.

ANÆSTHETIC REQUIREMENTS.

Instruments.

Tongue Forceps.
Mouth Gag.
Tongue Depressor.
Sponge and Holder.
Tracheotomy Tube.
Tracheotomy Knife.
Feathers, for tube.
Hypodermic Syringes.
Oesophageal Forceps.
Davidson Syringe.

Restoratives.

Liq. Amm. Fort.
Spts. Amm. Arom.
Brandy and Whiskey.
Liq. Strychnin. (dose 5-10 minims.)
Ether.
Tr. Digitalis.
Sol. Green Tea
Amyl. Nitrat. (Pearls.)
Oxygen Gas.
Nitro-glycerine 1/50 gr.

Miscellaneous.

Wax Candle and Matches.
Large Fan.
Blocks or Bricks to elevate table.
Conical Jaw Opener.
Battery.

Miscellaneous.

Towels for Friction.
Hot water Bottles, Cold Water.
Ice, for rectum.
Forced Respiration Apparatus.
Saline Solution, ʒi. to 0i.

Form to be Filled in Before the Administration of an Anæsthetic.

Name.....Disease.....Age.....Sex.....
Birthplace.....Occupation.....Ward No.....
House Surgeon.....Date of Admission ..... Date of
Discharge..... Under care of. .....Report taken by.....
HABITS: Alcohol..... DISEASES: Epilepsy.....
Opium..... Apoplexy .....
Cocaine ..... Bright's Disease.....
Other Drugs ..... Other Diseases.....

Patients Condition.

Pulse before.....during.....after.....Circulation.....
Heart.....Lungs..... Nervous System.....
Urinary Analysis—Sp. Gr .....Albumen .....
Reaction.....Sugar .....
Anæsthetic commencedat .....Discontinued at.....
Anæsthetic used .....Amount used .....
State of Stomach during operation .....
Return to consciousness at.....
Date .....Administrator.....M.D.

General Remarks:

Figure 4 The "Anaesthetic Chart" was a pre-operative checklist and a post-operative surgical record to be used by the attending anesthetist in the TGH. Source: *Canada Lancet* 34 (1900-1901): 636-637.

the "value of the anesthetist ought to be in proportion to the responsibility placed upon him; and surely is not the life of the patient during the time of the operation within his keeping? Is he not more responsible for that life …?"[122] Despite the disparity in payment, doctors, including on occasion female practitioners, were attracted to the position for it gave them entry not only to the operating room, but also to the seat at the head of the table – literally.[123]

122 "Compensation of the Anesthetist," 87.

123 Although a late development, notable was the appointment of Jennie Smillie to the position of Senior Assistant Anesthetist in the TGH in June 1917 (UHNA-TGH, 1 June 1917). Smillie, initially a victim of gender discrimination by her male colleagues, became recognized as the first woman surgeon in Ontario. She trained at the Ontario Medical College for Women/University of Toronto, graduating in 1909, then undertook a surgical

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Beginning in the 1890s general hospitals in Toronto and Montreal appointed full-time paid anesthetists to their staff, a process that spread across the country.[124] However, the selection, hiring, and remuneration of hospital anesthetists often became contentious and an item of recurring administrative review.[125] During the next couple of decades the specialty of anesthesia became more established with the founding of a professional society in 1920, then later formal recognition by the Royal College of Physicians and Surgeons of Canada.[126]

Conclusion: sweet dreams or the big sleep?

This account of the uptake of anesthesia in surgery and childbirth in Canada from the 1840s has described various modalities of producing pain-free medical procedures, from mesmerism, to inhalation of ether and chloroform to induce insensibility in patients. All these techniques enjoyed success but similarly had clinical and cultural drawbacks and risks associated with them, which often limited their employment while also promoting public and professional debate. The most notable untoward challenge for both doctor and patient was the possibility of anesthetized persons never regaining consciousness culminating in their death. Within the Canadian context it is not possible to calculate any notion of an accurate quantitative risk factor owing to the absence of extensive historical clinical records that might facilitate a "calculus of suffering" as Pernick has described for the US. Notwithstanding this lacuna, it is clear from primary evidence that a calculated risk/benefit regarding the safety of anesthetic surgery existed as a collective popular mindset. Dreading death under anesthesia was outweighed by the fear of pain when being operated on. As we saw, one patient expressed that he was prepared to die as all should be under the influence of chloroform—but he consented to both the operation and anesthesia, regardless. Doctors, too, must have calculated the odds in a similar manner: the risk to their reputations if their patient died was worth taking over inflicting undue pain on any person. But as coroners' inquests illustrated, doctors were never found culpable for any mistakes in such occurrences.

Acknowledging the priority of qualitative evidence over the quantitative, this discussion has relied primarily upon extant published sources such as professional Canadian medical journals and popular press reports. Accounts of medical and surgical society proceedings, hospital and domiciliary case reports, coroners' inquests, medical and journalistic editorials in this way have allowed close reading for as comprehensive and scholarly a discussion as yet available of the introduction and evolving methods and agents deployed by Canadian doctors to induce anesthesia. On the one hand, as has been shown much of this story is an amalgam of trends and events reflected in historical narratives of American and British uptakes of anesthesia.

residency at the Woman's Medical College of Pennsylvania. In 1911 she was one of the group of pioneering women who established Women's College Hospital in Toronto, where she became associate chief of gynecology. See *The Canadian Encyclopedia*, https://www.thecanadianencyclopedia.ca/en/article/jennie-smillie; Lykke de la Cour and Rose Sheinin, "The Ontario Medical College for Women,1883-1906: Lessons from Gender-Separatism in Medical Education," in *Despite the Odds: Essays on Canadian Women and Science*, ed. Marianne Gosztonyi Ainley (Montreal: Véhicule Press, 1990), 112-133.

124 W.G. Cosbie, *The Toronto General Hospital, 1819-1965: A Chronicle* (Toronto: Macmillan, 1975), 126; D. Sclater Lewis, *Royal Victoria Hospital, 1887-1947* (Montreal: McGill University Press, 1969), 52.

125 UHNA-TGH, 3 July 1899; 4 July 1904; 3 February 1905; 11 July 1905; 12 October 1905; 2 December 1914; 3 March 1915; 8 November 1916.

126 Harold R. Griffith, "Anaesthesia in Canada 1847-1967: II The Development of Anaesthesia in Canada," *Canadian Anaesthetists' Journal* 14 (1967): 510-518.

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Yet different emphases can be discerned that reflect how Canada's experience was not simply a mirror image of either country. Initially, the use of ether was quickly embraced as in the US, but unlike its neighbour to the south, ether was quickly eclipsed by the British anesthetic agent chloroform. The use of chloroform, along with its simple method of administration using a cloth on to which the substance was carefully dropped (the so-called ready or "Scotch method"), endured for much of the Victorian period and on. However, from the 1880s many Canadian practitioners did revert to the use of ether using a variety of mechanical inhalers, when the safety of chloroform was debated in Canada as it was in Britain.[127]

Later in the twentieth century, this trans-Atlantic/US mixed clinical-cultural heritage again was on display through professional terminology when Canadian doctors chose to describe the changing identity of the new specialty of anesthesia as reflected in association/journal titles. The Canadian Anaesthetists' Society (CAS) founded in 1943 transformed fifty years later into the Canadian Anesthesiologists' Society. At the same time, what had been the CAS *Journal* that reportedly contained 25 per cent American content evolved into the bilingual *Canadian Journal of Anesthesia/Journal Canadien d'Anesthésia.*[128] Such transnationalism in the development of anesthesia professionalism in Canada is also openly recognized by clinical practitioners in the field, who acknowledge that "Combining the physician-based model from the UK with the positive influence of University-based departments of the US facilitated the development of the Canadian identity."[129] The confluence of these professionalizing trends and others have resulted in Canadian patient safety records that are equal to any other modern Western-style health care system. According to the CAS, currently "the chance of a healthy person dying as a result of anesthesia is probably between 1 in 200,000 and 1 in 400,000. This is certainly comparable with the risks of commercial airline travel and much safer than travelling by car."[130] Such present-day odds in Canada are much improved over the "guesstimate" proffered in 1867 of 1 death in 20,000 persons who received anesthesia. Indeed, the chances of anesthetic "sweet dreams" morphing into the "big sleep" are constantly being reduced.[131]

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127 Snow, *Operations Without Pain,* chapter 4; Lawrence, "Experiment and Experience in Anaesthesia," passim.

128 Craig et al., "History of Canadian Anesthesia," 323-334. See also Jennifer J. Connor, "Medical Publishing," in *History of the Book in Canada, 1918-1980*, Vol. 3, ed. Carole Gerson and Jacques Michon (Toronto: University of Toronto Press, 2007), 343-346.

129 Craig et al., "History of Canadian Anesthesia," 329.

130 Canadian Anesthesiologists' Society, "What are the risks of anesthesia?" https://www.cas.ca/en/about-cas/advocacy/anesthesia-faq/what-are-the-risks-of-anesthesia.

131 Canadian Press, "Anesthesia Death Rates Improve Over 50 Years," 21 September 2012, https://www.cbc.ca/news/health/anesthesia-death-rates-improve-over-50-years-1.1200837. With apologies to The Eurythmics and Raymond Chandler, respectively.